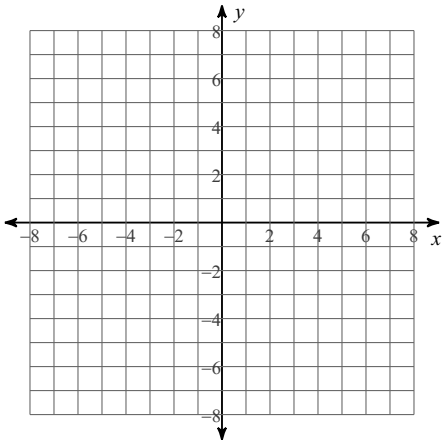
MODULE D Name_____

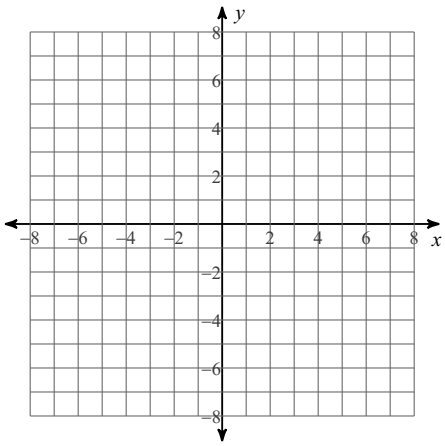
SKETCHING GRAPHS AND FINDING POINTS OF INTERSECTION

For each problem, find the points if intersection enclosed by the curves. Use the provided graph to sketch the curves and shade the enclosed region given by the interval.
REFER ONLY TO GRAPHICAL PORTION OF THE ANSWERS.

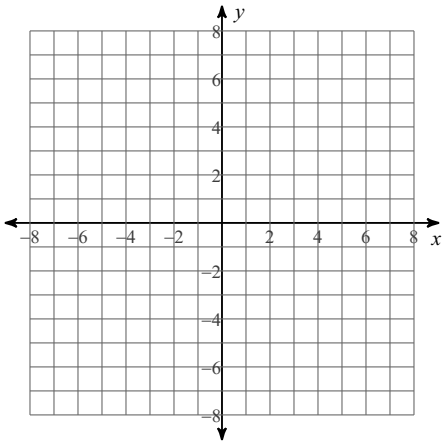
1) $y = \frac{4}{x^2}$, $y = -1$,
$x = -4$, $x = -2$



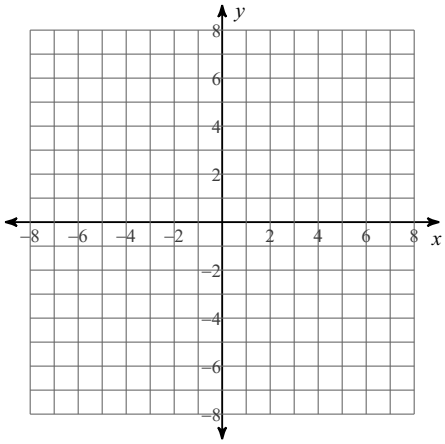
2) $y = -x^2 - 2x - 2$, $y = -x^2 - 4x$,
$x = -3$, $x = 1$



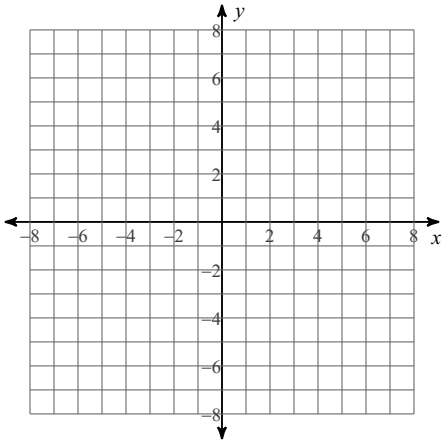
3) $y = 3\sqrt{x}$, $y = -2\sqrt{x}$,
$x = 0$, $x = 4$



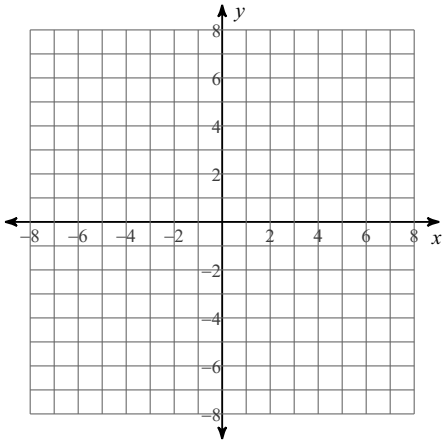
4) $y = -2x^2 + 12x - 18$, $y = -x^2 + 6x - 7$,
$x = 3$, $x = 4$



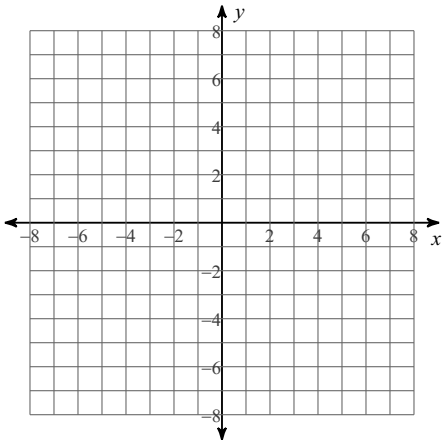
5) $y = -\frac{x^2}{2} - 3x - \frac{7}{2}$, $y = -x^2 - 4x - 5$,
$x = -4$, $x = -3$



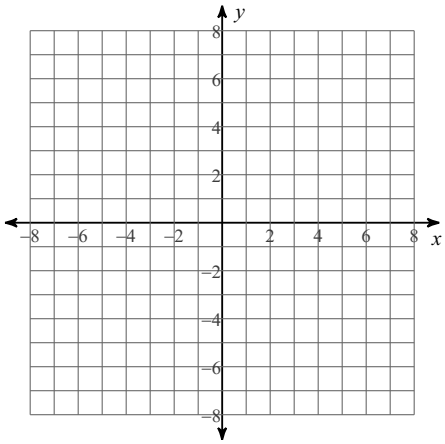
6) $y = 2x^2 - 16x + 34$, $y = -\frac{x}{2}$,
$x = 3$, $x = 5$



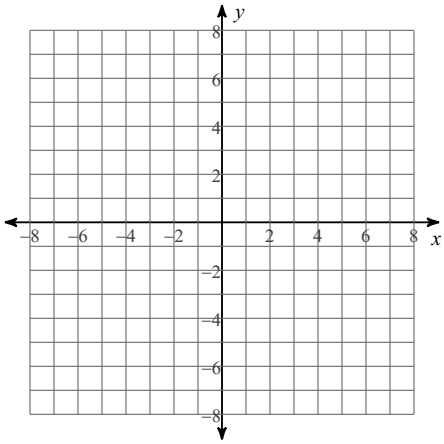
7) $y = \frac{3}{x^2}$, $y = -2$,
$x = -5$, $x = -2$



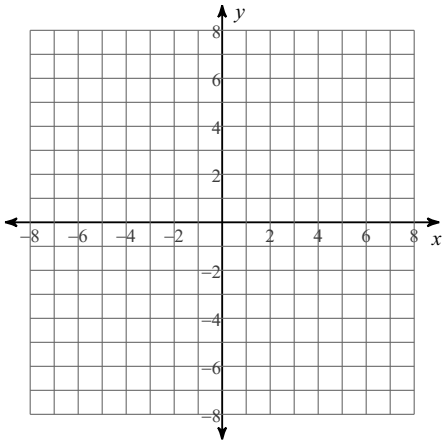
8) $y = -\frac{4}{x^2}$, $y = 1$,
$x = -4$, $x = -1$



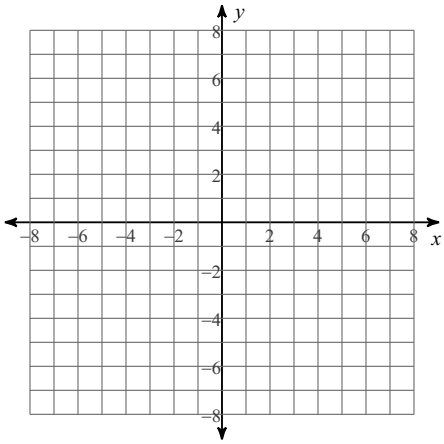
9) $y = -\frac{1}{x^2}$, $y = 3$,
$x = 2$, $x = 5$



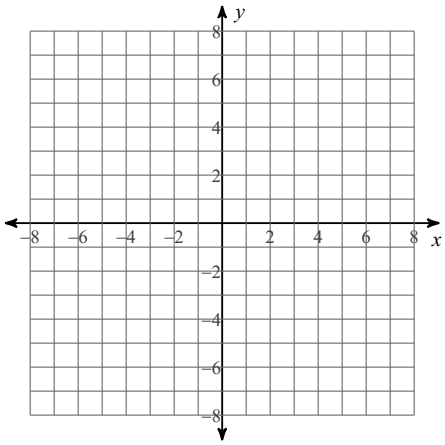
10) $y = -\frac{3}{x^2}$, $y = 4$,
$x = 1$, $x = 4$



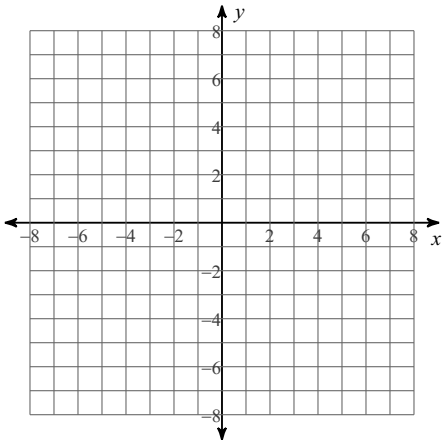
11) $y = 2x^2 + 16x + 28$, $y = x^2 + 6x + 3$,
$x = -5$, $x = -2$



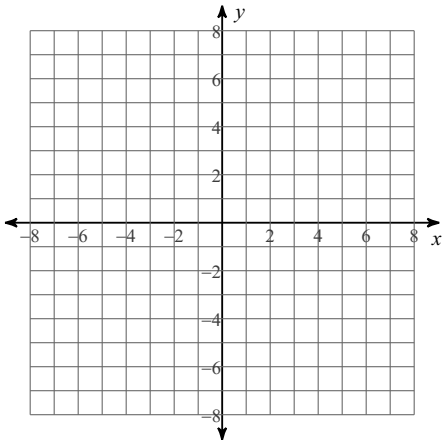
12) $y = \sqrt{x}$, $y = -3\sqrt{x}$,
$x = 0$, $x = 4$



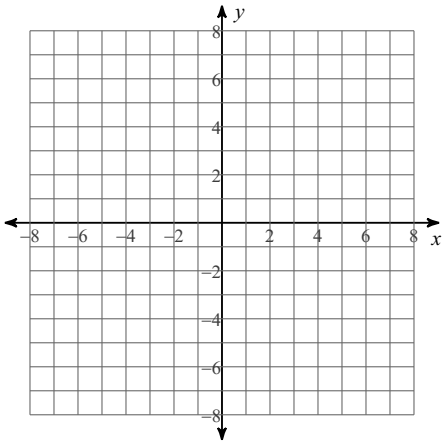
13) $y = \frac{3}{x^2}$, $y = -4$,
$x = 2$, $x = 5$



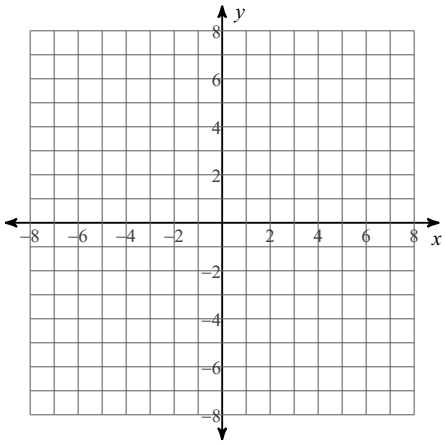
14) $y = \frac{2}{x^2}$, $y = -4$,
$x = 2$, $x = 5$



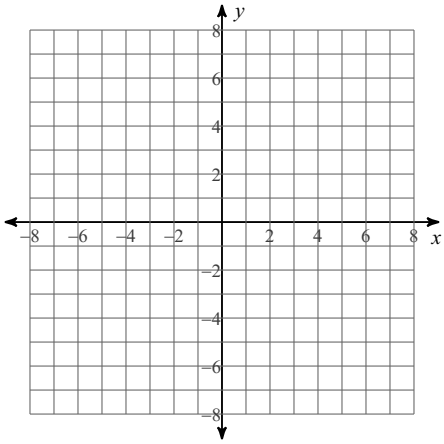
15) $y = -\frac{3}{x^2}$, $y = 4$,
$x = -4$, $x = -2$



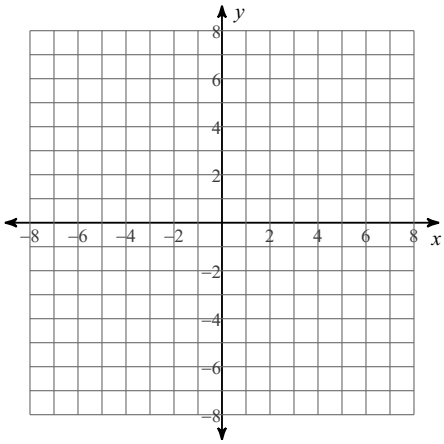
16) $y = -\frac{4}{x^2}$, $y = -4$,
$x = 1$, $x = 2$



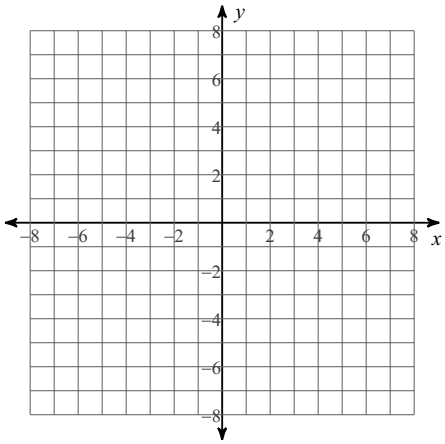
17) $y = 3\sqrt{x}$, $y = \sqrt{x}$,
$x = 0$, $x = 4$



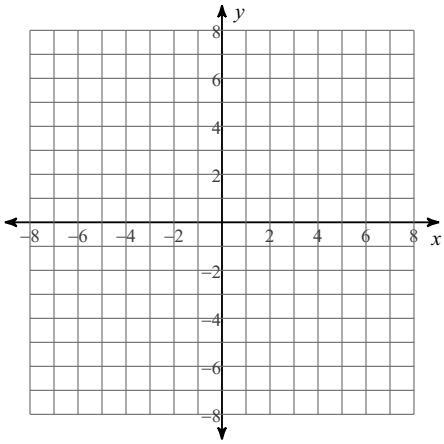
18) $y = -\frac{1}{x^2}$, $y = 1$,
$x = 1$, $x = 3$



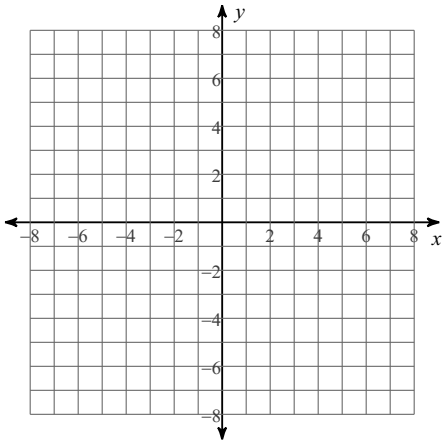
19) $y = -\frac{4}{x^2}$, $y = 1$,
$x = 2$, $x = 5$



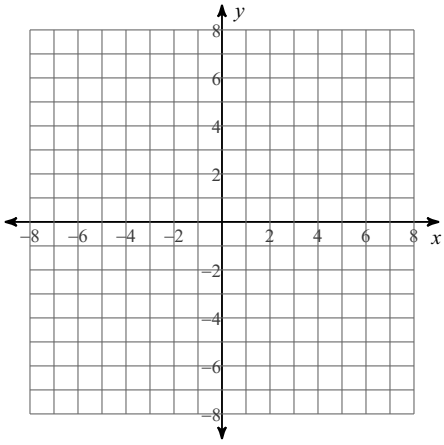
20) $y = -\frac{3}{x^2}$, $y = 1$,
$x = 2$, $x = 4$



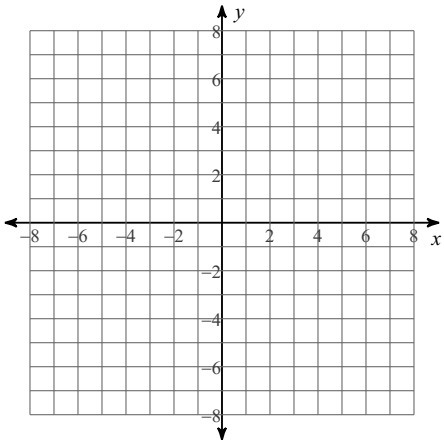
21) $y = -\frac{x^2}{2} + 4x - 2$, $y = -\frac{x}{2} - 2$,
$x = 4$, $x = 7$



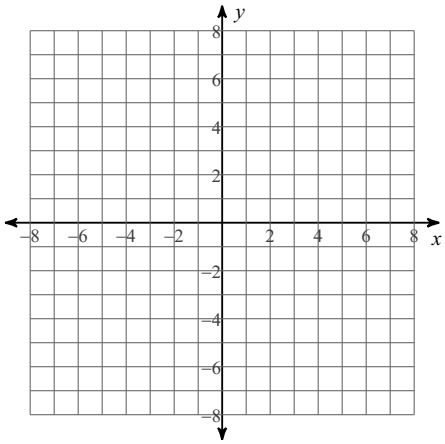
22) $y = -\frac{4}{x^2}$, $y = 4$,
$x = 1$, $x = 3$



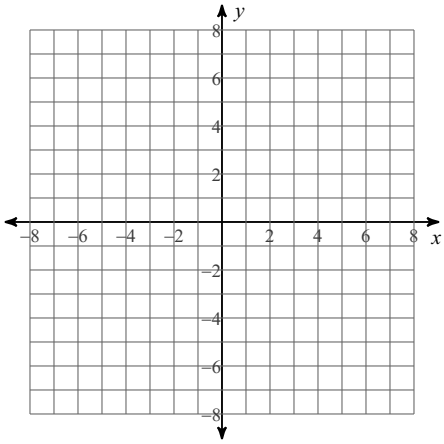
23) $y = -\dfrac{2}{x^2}$, $y = 2$,
$x = -3$, $x = -1$



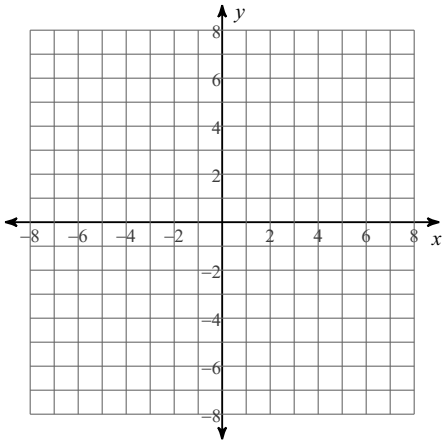
24) $y = -\dfrac{3}{x^2}$, $y = 4$,
$x = -3$, $x = -1$



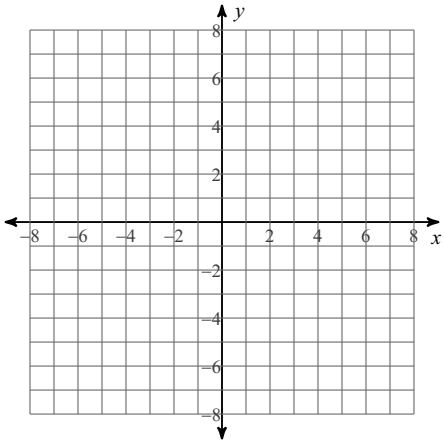
25) $y = -3\sqrt{x}$, $y = 3\sqrt{x}$,
$x = 0$, $x = 4$



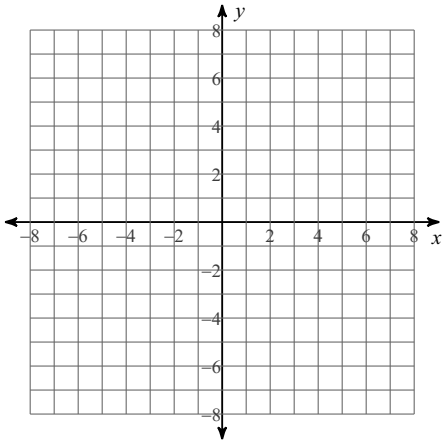
26) $y = -x^2 - 4x - 1$, $y = x - 1$,
$x = -5$, $x = 0$



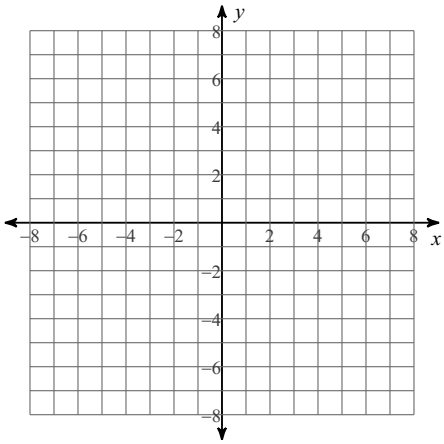
27) $y = -2x^2 - 4x$, $y = -\dfrac{x^2}{2} + 5$,
$x = -3$, $x = 0$



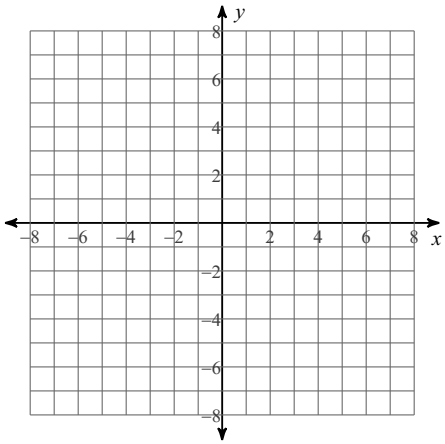
28) $y = \dfrac{2}{x^2}$, $y = -1$,
$x = -3$, $x = -1$



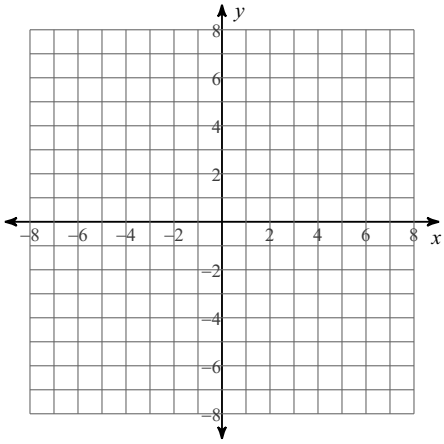
29) $y = -\frac{1}{x^2}$, $y = -1$,
$x = -5$, $x = -2$



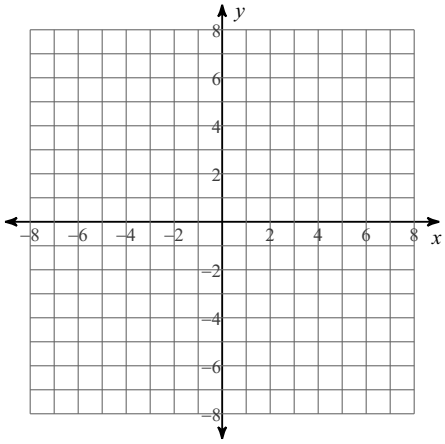
30) $y = 3\sqrt{x}$, $y = 2\sqrt{x}$,
$x = 0$, $x = 4$



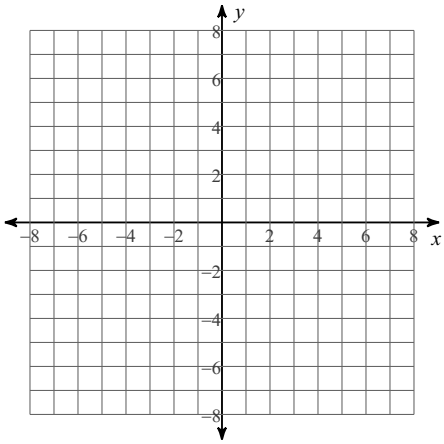
31) $y = -x^2 - 6x - 10$, $y = x^2 + 6x + 10$,
$x = -5$, $x = -1$



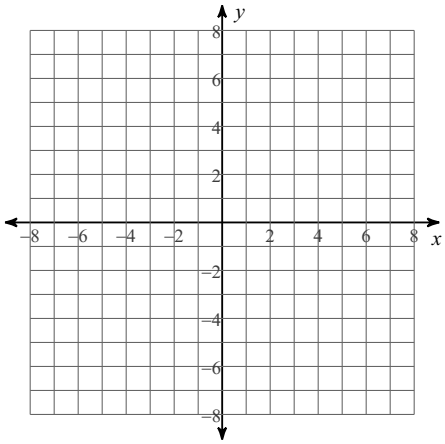
32) $y = -2x^2 - 12x - 20$, $y = -x - 4$,
$x = -4$, $x = -3$



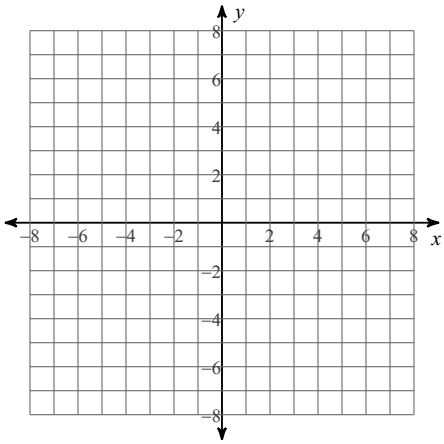
33) $y = -\frac{2}{x^2}$, $y = 4$,
$x = 1$, $x = 4$



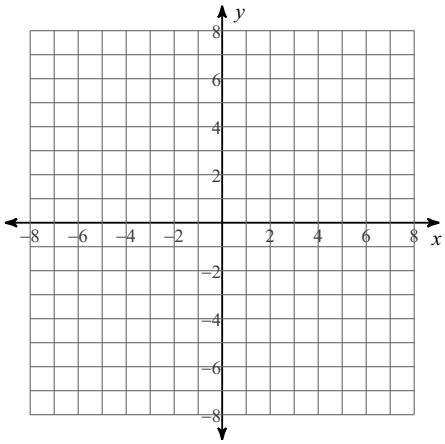
34) $y = -\frac{2}{x^2}$, $y = 4$,
$x = 1$, $x = 2$



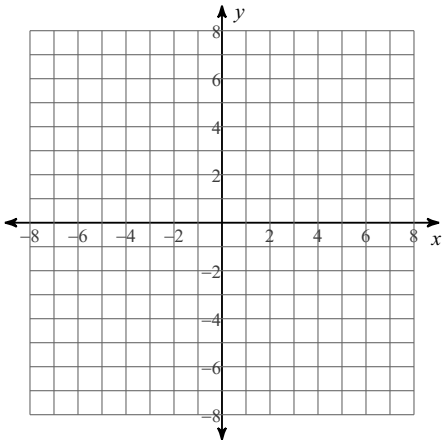
35) $y = \frac{x^2}{2} - x + \frac{1}{2}$, $y = \frac{x^2}{2} - x + \frac{3}{2}$,
$x = 0$, $x = 3$



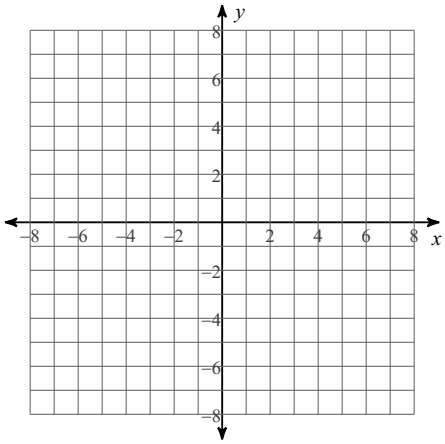
36) $y = \frac{x^2}{2} - 4x + 10$, $y = -\frac{x}{2} - 2$,
$x = 2$, $x = 7$



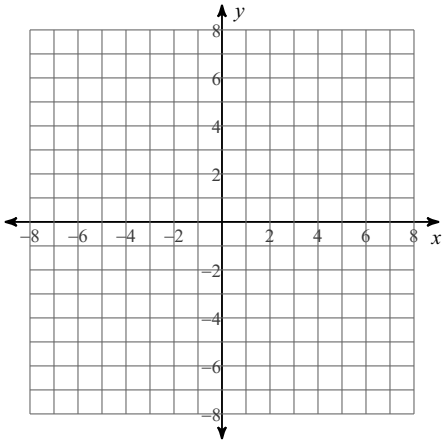
37) $y = -x^2 - 6x - 9$, $y = -x$,
$x = -5$, $x = -2$



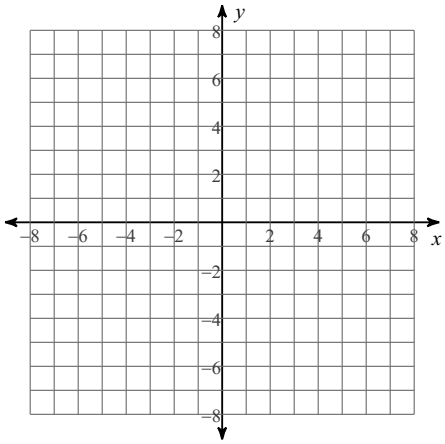
38) $y = 2x^2 - 12x + 20$, $y = -\frac{x}{2}$,
$x = 2$, $x = 3$



39) $y = \frac{3}{x^2}$, $y = 3$,
$x = 1$, $x = 3$



40) $y = x^2 - 6x + 11$, $y = x^2 - 4x - 1$,
$x = 2$, $x = 5$



Answers to SKETCHING GRAPHS AND FINDING POINTS OF INTERSECTION

1) $\int_{-4}^{-2}\left(\frac{4}{x^2}+1\right)dx$
$=3$

2) $\int_{-3}^{1}\left(-x^2-4x-\left(-x^2-2x-2\right)\right)dx$
$=16$

3) $\int_{0}^{4}\left(3\sqrt{x}+2\sqrt{x}\right)dx$
$=\frac{80}{3}\approx 26.667$

4) $\int_{3}^{4}\left(-x^2+6x-7-\left(-2x^2+12x-18\right)\right)dx$
$=\frac{7}{3}\approx 2.333$

5) $\int_{-4}^{-3}\left(-\frac{x^2}{2}-3x-\frac{7}{2}-\left(-x^2-4x-5\right)\right)dx$
$=\frac{25}{6}\approx 4.167$

6) $\int_{3}^{5}\left(2x^2-16x+34+\frac{x}{2}\right)dx$
$=\frac{28}{3}\approx 9.333$

7) $\int_{-5}^{-2}\left(\frac{3}{x^2}+2\right)dx$
$=\frac{69}{10}=6.9$

8) $\int_{-4}^{-1}\left(1+\frac{4}{x^2}\right)dx$
$=6$

9) $\int_{2}^{5}\left(3+\frac{1}{x^2}\right)dx$
$=\frac{93}{10}=9.3$

10) $\int_{1}^{4}\left(4+\frac{3}{x^2}\right)dx$
$=\frac{57}{4}=14.25$

11) $\int_{-5}^{-2}\left(2x^2+16x+28-\left(x^2+6x+3\right)\right)dx$
$=9$

12) $\int_{0}^{4}\left(\sqrt{x}+3\sqrt{x}\right)dx$
$=\frac{64}{3}\approx 21.333$

13) $\int_{2}^{5}\left(\frac{3}{x^2}+4\right)dx$
$=\frac{129}{10}=12.9$

14) $\int_{2}^{5}\left(\frac{2}{x^2}+4\right)dx$
$=\frac{63}{5}=12.6$

15) $\int_{-4}^{-2}\left(4+\frac{3}{x^2}\right)dx$
$=\frac{35}{4}=8.75$

16) $\int_{1}^{2}\left(-\frac{4}{x^2}+4\right)dx$
$=2$

17) $\int_{0}^{4}\left(3\sqrt{x}-\sqrt{x}\right)dx$
$=\frac{32}{3}\approx 10.667$

18) $\int_{1}^{3}\left(1+\frac{1}{x^2}\right)dx$
$=\frac{8}{3}\approx 2.667$

19) $\int_{2}^{5}\left(1+\frac{4}{x^2}\right)dx$
$=\frac{21}{5}=4.2$

20) $\int_{2}^{4}\left(1+\frac{3}{x^2}\right)dx$
$=\frac{11}{4}=2.75$

21) $\int_{4}^{7}\left(-\frac{x^2}{2}+4x-2-\left(-\frac{x}{2}-2\right)\right)dx$
$=\frac{111}{4}=27.75$

22) $\int_{1}^{3}\left(4+\frac{4}{x^2}\right)dx$
$=\frac{32}{3}\approx 10.667$

23) $\int_{-3}^{-1}\left(2+\frac{2}{x^2}\right)dx$
$=\frac{16}{3}\approx 5.333$

24) $\int_{-3}^{-1}\left(4+\frac{3}{x^2}\right)dx$
$=10$

25) $\int_{0}^{4}\left(3\sqrt{x}+3\sqrt{x}\right)dx$
$=32$

26) $\int_{-5}^{0}\left(-x^2-4x-1-\left(x-1\right)\right)dx$
$=\frac{125}{6}\approx 20.833$

27) $\int_{-3}^{0}\left(-\frac{x^2}{2}+5-\left(-2x^2-4x\right)\right)dx$
$=\frac{21}{2}=10.5$

28) $\int_{-3}^{-1}\left(\frac{2}{x^2}+1\right)dx$

$=\frac{10}{3}\approx 3.333$

29) $\int_{-5}^{-2}\left(-\frac{1}{x^2}+1\right)dx$

$=\frac{27}{10}=2.7$

30) $\int_{0}^{4}\left(3\sqrt{x}-2\sqrt{x}\right)dx$

$=\frac{16}{3}\approx 5.333$

31) $\int_{-5}^{-1}\left(x^2+6x+10-\left(-x^2-6x-10\right)\right)dx$

$=\frac{56}{3}\approx 18.667$

32) $\int_{-4}^{-3}\left(-x-4-\left(-2x^2-12x-20\right)\right)dx$

$=\frac{13}{6}\approx 2.167$

33) $\int_{1}^{4}\left(4+\frac{2}{x^2}\right)dx$

$=\frac{27}{2}=13.5$

34) $\int_{1}^{2}\left(4+\frac{2}{x^2}\right)dx$

$=5$

35) $\int_{0}^{3}\left(\frac{x^2}{2}-x+\frac{3}{2}-\left(\frac{x^2}{2}-x+\frac{1}{2}\right)\right)dx$

$=3$

36) $\int_{2}^{7}\left(\frac{x^2}{2}-4x+10-\left(-\frac{x}{2}-2\right)\right)dx$

$=\frac{445}{12}\approx 37.083$

37) $\int_{-5}^{-2}\left(-x-\left(-x^2-6x-9\right)\right)dx$

$=\frac{27}{2}=13.5$

38) $\int_{2}^{3}\left(2x^2-12x+20+\frac{x}{2}\right)dx$

$=\frac{47}{12}\approx 3.917$

39) $\int_{1}^{3}\left(3-\frac{3}{x^2}\right)dx$

$=4$

40) $\int_{2}^{5}\left(x^2-6x+11-\left(x^2-4x-1\right)\right)dx$

$=15$