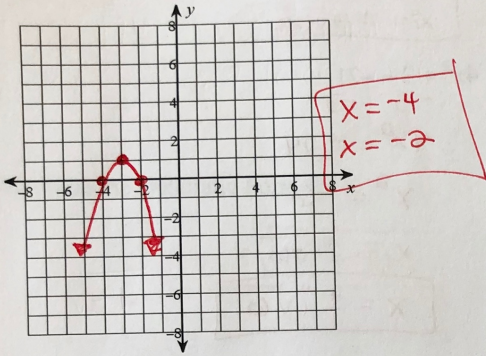


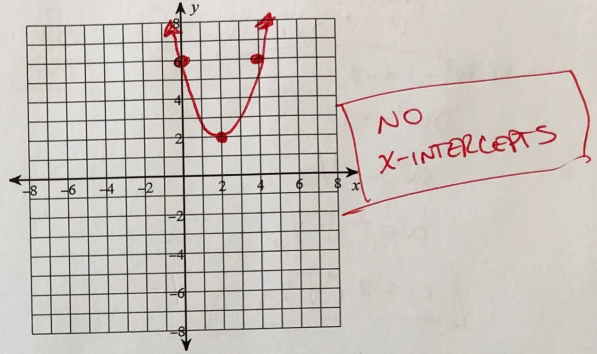
Unit 2 Review

Identify the ~~vertex, axis of symmetry,~~ and x-intercepts of each. Then use Desmos to sketch the graph.

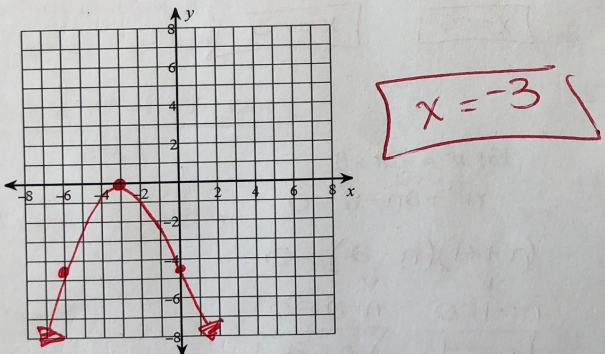
1) $y = -x^2 - 6x - 8$



2) $y = x^2 - 4x + 6$



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



Solve each equation by taking square roots.

4) $-8 - 6v^2 = -494$
 $+8 \quad +8$
 $-6v^2 = -486$
 $v^2 = 81$
 $v = \pm \sqrt{81}$
 $v = 9, -9$

5) $9v^2 + 5 = 905$
 $-5 \quad -5$
 $9v^2 = 900$
 $v^2 = 100$
 $v = \pm \sqrt{100}$
 $v = \pm 10$

$$6) 2p^2 - 7 = 173$$

$$+7 \quad +7$$

$$2p^2 = 180$$

$$p^2 = 90$$

$$p = \pm\sqrt{90}$$

$$p = \pm\sqrt{9 \cdot 10}$$

$$p = \pm 3\sqrt{10}$$

$$8) 3a^2 - 1 = -2$$

$$3a^2 = -1$$

$$a^2 = -1/3$$

$$a = \pm\sqrt{-1/3}$$

$$a = \pm i\sqrt{1/3}$$

$$7) 6x^2 + 5 = 533$$

$$-5 \quad -5$$

$$6x^2 = 528$$

$$x^2 = 88$$

$$x = \pm\sqrt{88}$$

$$x = \pm\sqrt{4 \cdot 22}$$

$$x = \pm 2\sqrt{22}$$

$$9) 4x^2 + 3 = -21$$

$$-3 \quad -3$$

$$4x^2 = -24$$

$$x^2 = -6$$

$$x = \pm\sqrt{-6}$$

$$x = \pm i\sqrt{6}$$

Solve each equation by factoring.

$$10) a^2 - a - 30 = 0$$

$$(a-6)(a+5) = 0$$

$$a-6=0$$

$$a+5=0$$

$$a=6$$

$$a=-5$$

$$11) x^2 + 8x + 15 = 0$$

$$(x+5)(x+3) = 0$$

$$x+5=0$$

$$x+3=0$$

$$x=-5$$

$$x=-3$$

$$12) p^2 - 2p + 6 = 6$$

$$p^2 - 2p + 0 = 0$$

$$(p-2)(p+0) = 0$$

$$p-2=0$$

$$p+0=0$$

$$p=2$$

$$p=0$$

$$13) n^2 = -2n + 8$$

$$n^2 + 2n - 8 = 0$$

$$(n+4)(n-2) = 0$$

$$n+4=0$$

$$n-2=0$$

$$n=-4$$

$$n=2$$

$$14) 2p^2 + 3p - 5 = 0$$

$$(2p^2 - 2p) + (5p - 5) = 0$$

$$2p(p-1) + 5(p-1) = 0$$

$$(2p+5)(p-1) = 0$$

$$2p+5=0$$

$$p-1=0$$

$$2p = -5$$

$$p=1$$

$$p = -5/2$$

$$15) 2k^2 - 7k - 30 = 0$$

$$(2k^2 + 5k) - (12k - 30) = 0$$

$$k(2k+5) - 6(2k-5) = 0$$

$$(k-6)(2k+5) = 0$$

$$k-6=0$$

$$2k+5=0$$

$$k=6$$

$$2k = -5$$

$$k = -5/2$$

$$16) 8k^2 - 47k - 2 = 4$$

$$8k^2 - 47k - 6 = 0$$

$$(8k^2 + k) + (48k - 6) = 0$$

$$k(8k+1) - 6(8k+1) = 0$$

$$(k-6)(8k+1) = 0$$

$$k-6=0 \quad 8k+1=0$$

$$\boxed{k=6}$$

$$8k = -1$$

$$\boxed{k = -\frac{1}{8}}$$

$$8 \cdot -6 = -48$$

$$\begin{array}{r} 1 \ 48 \\ 2 \ 24 \\ 3 \ 16 \\ 4 \ 12 \\ 6 \ 8 \end{array}$$

$$17) 5k^2 - 32k = 21$$

$$5k^2 - 32k - 21 = 0$$

$$(5k^2 + 3k) + (35k - 21) = 0$$

$$k(5k+3) - 7(5k+3) = 0$$

$$(k-7)(5k+3) = 0$$

$$k-7=0 \quad 5k+3=0$$

$$\boxed{k=7}$$

$$5k = -3$$

$$\boxed{k = -\frac{3}{5}}$$

$$5 \cdot -21 = -105$$

$$\begin{array}{r} 1 \ 105 \\ 3 \ -35 \\ 5 \ 21 \end{array}$$

18) Write the Quadratic Formula.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Solve each equation with the quadratic formula.

$$19) 5x^2 - 11x - 136 = -12$$

$$5x^2 - 11x - 124 = 0$$

$$a=5 \quad b=-11 \quad c=-124$$

$$x = \frac{-(-11) \pm \sqrt{(-11)^2 - (4 \cdot 5 \cdot -124)}}{2(5)}$$

$$x = \frac{11 \pm \sqrt{121 - (-2480)}}{10}$$

$$x = \frac{11 \pm \sqrt{2601}}{10}$$

$$x = \frac{11 \pm 51}{10}$$

$$x = \frac{11+51}{10}$$

$$x = \frac{11-51}{10}$$

$$x = \frac{62}{10}$$

$$x = \frac{-40}{10}$$

$$\boxed{x = \frac{31}{5}}$$

$$\boxed{x = -4}$$

$$20) 8k^2 + 9k - 21 = -12$$

$$8k^2 + 9k - 9 = 0$$

$$a=8 \quad b=9 \quad c=-9$$

$$x = \frac{-9 \pm \sqrt{9^2 - (4 \cdot 8 \cdot -9)}}{2(8)}$$

$$x = \frac{-9 \pm \sqrt{81 - (-288)}}{16}$$

$$x = \frac{-9 \pm \sqrt{369}}{16}$$

$$x = \frac{-9 \pm \sqrt{9 \cdot 41}}{16}$$

$$\boxed{x = \frac{-9 \pm 3\sqrt{41}}{16}}$$