

HW #13

4.1.6 : $f(x) = -(x+1)^2 - 9$

a.) $(-1, -9)$

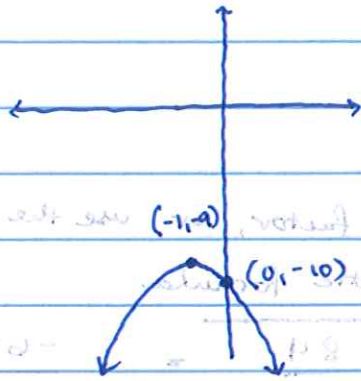
b.) down

c.) $x = -1$ $f = 0 - 9 = -9$

d.) there are no x-intercepts

e.) $(0, -10)$

f.)



g.) $D(f) = (-\infty, \infty)$

$R(f) = (-\infty, -9]$

4.1.11

$f(x) = x^2 - 8x$

$= x^2 - 8x + 16 - 16$

$= (x-4)^2 - 16$

$\frac{-8 \pm \sqrt{64}}{2} = 4 \text{ and } 0$

4.1.13

$f(x) = 3x^2 + 6x - 4$

$= 3(x^2 + 2x) - 4$

$= 3(x^2 + 2x + 1 - 1) - 4$

$= 3(x^2 + 2x + 1) - 3 - 4$

$= 3(x+1)^2 - 7$

$\frac{-6 \pm \sqrt{36}}{2} = -1 \text{ and } -2$

4.1.23 $f(x) = 3x^2 + 6x - 4$

a) $\frac{-b}{2a} = \frac{-6}{6} = -1$

$f(-1) = 3(-1)^2 + 6(-1) - 4 = 3 - 6 - 4 = -7$

$(-1, -7)$

b.) up

c.) $x = -1$

d.) $0 = 3x^2 + 6x - 4$

we can complete the square, factor, (or) use the quadratic formula. Let's use the quadratic formula

$x = \frac{-6 \pm \sqrt{36 + 48}}{6} = \frac{-6 \pm \sqrt{84}}{6} = \frac{-6 \pm 2\sqrt{21}}{6}$

$= \frac{-3 \pm \sqrt{21}}{3}$

x intercepts: $\left(\frac{-3 + \sqrt{21}}{3}, 0\right)$ and $\left(\frac{-3 - \sqrt{21}}{3}, 0\right)$

e.) $(0, -4)$

f.)

