

Solutions to Quad Review #2

① $y = x^2 - 2x - 3$

a.) $a=1$, so parabola opens up

b.) start with $-\frac{b}{2a} = \frac{-(-2)}{2(1)} = 1$

plug $x=1$ in quadratic $y = 1^2 - 2(1) - 3 = -4$

Vertex $(1, -4)$

c.) Since parabola opens up vertex is a minimum

d.) The x-coordinate of the vertex corresponds with the axis. $x=1$

e.) Plug 0 in for x to get the y-intercept
 $y = 0^2 - 2(0) - 3 = -3$ $(0, -3)$

f.) Factor $x^2 - 2x - 3$, look for 2 factors of -3 that add to $-2 \rightarrow -3, 1$ So...

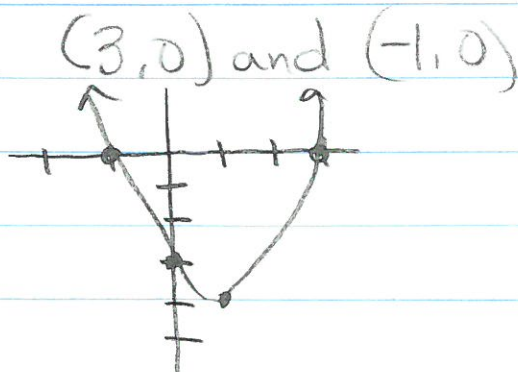
$$(x-3)(x+1) = 0$$

$$x-3=0 \quad x+1=0$$

$$x=3 \quad x=-1$$

The x-intercepts are $(3, 0)$ and $(-1, 0)$

g.) Use all of above



2.) Set equal to zero $-2x^2 + 16x + 29 = 0$
graph in your graphing calculator as
 $f(x) = -2x^2 + 16x - 29$

look for x-intercepts with

Nspire

TI-84

menu

2ND-TRACE (CALC)

analyze

zero

zero

Solutions (-1.52 or 9.52)

3.) $4(x+2)^2 - 8 = 28$
 $\quad\quad\quad +8 \quad +8$

$$\frac{4(x+2)^2}{4} = \frac{36}{4}$$

$$(x+2)^2 = 9$$

$$\sqrt{(x+2)^2} = \pm\sqrt{9}$$

$$x+2 = \pm 3$$

$$\quad -2 \quad -2$$

$$x = \pm 3 - 2$$

$$3 - 2 = 1 \quad -3 - 2 = -5$$

$$\textcircled{4} \quad 3x^2 - 16 = 8x$$

$$3x^2 - 8x - 16 = 0 \quad \left. \begin{array}{l} \text{Factors of } -48 \\ \text{Add to } -8 \end{array} \right\} -12, 4$$

$$(3x^2 - 12x) + (4x - 16) = 0$$

$$3x(x-4) + 4(x-4) = 0$$

$$(x-4)(3x+4) = 0$$

$$x-4=0 \quad 3x+4=0$$

$$x=4 \quad x=-\frac{4}{3}$$

$$\textcircled{5} \quad 8a^2 + 6a = -5 \rightarrow \frac{-6 \pm \sqrt{6^2 - 4(8)(5)}}{2(8)}$$

$$8a^2 + 6a + 5 = 0$$

$$\frac{-6 \pm \sqrt{-124}}{16} = \frac{-6 \pm 2i\sqrt{31}}{16}$$

$$= \frac{-3 \pm i\sqrt{31}}{8}$$

$$\textcircled{6} \quad 2x^2 - 10x - 5 = 0$$

$$(-10)^2 - 4(2)(-5)$$

$$140$$

2 real solutions

2 x-intercepts

$$7a) \quad (4+6i)(4+6i)$$

$$16 + 24i + 24i + 36i^2$$

$$16 + 48i + 36(-1)$$

$$-20 + 48i$$

$$b.) \quad -3 + 6i + 5 + 3i - 8i$$

$$2 + i$$

8.) Graph and find points of intersection $(-1, 0)$
 $(2.5, 1.56)$