BONUS ASSIGNMENT
SKETCHING PARABOLAS
SOLUTIONS

$$y = -x^2 - 4x - 3$$

y-intercept $y = -3$

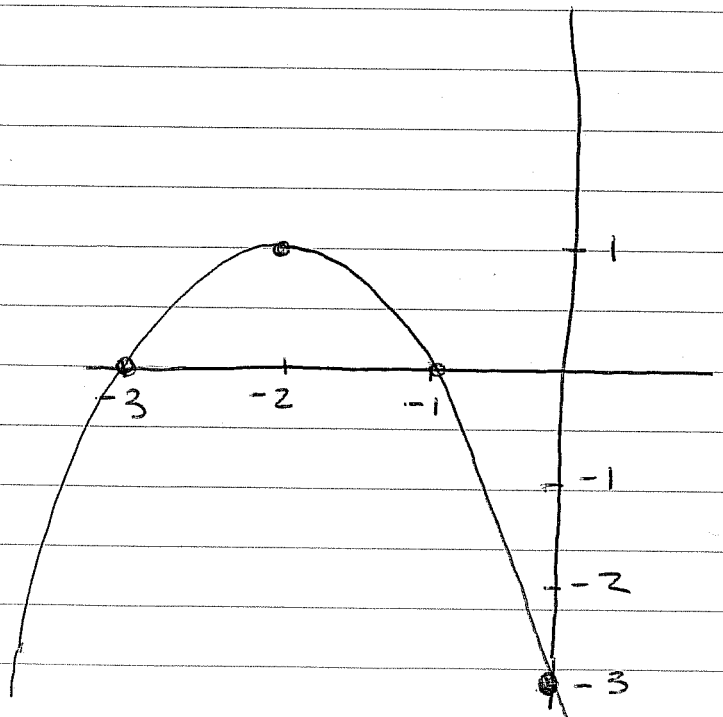
x-intercept

$$0 = -x^2 - 4x - 3$$
$$x^2 + 4x + 3 = 0$$
$$(x+3)(x+1) = 0$$
$$x = -3, \quad x = -1$$

vertex $x = \frac{-b}{2a} = \frac{-(-4)}{2(-1)} = -2$

$$y = -(-2)^2 - 4(-2) - 3$$
$$= -4 + 8 - 3 = 1$$

vertex : $(-2, 1)$



$y = 2x^2 + 8x - 5$

y- intercept $y = -5$

x- intercepts

$$0 = 2x^2 + 8x - 5$$

$$x = \frac{-8 \pm \sqrt{64 - 4(2)(-5)}}{2(2)}$$

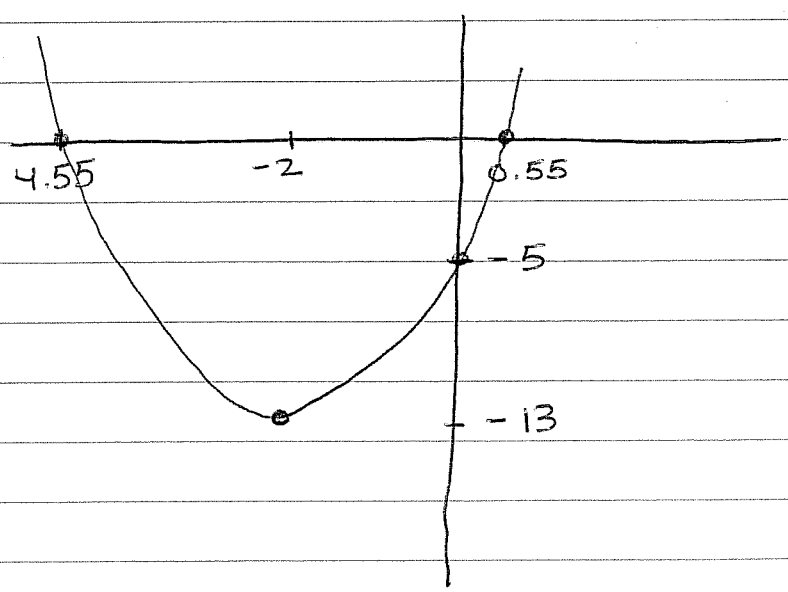
$$= \frac{-8 \pm \sqrt{104}}{4}$$

$$x \doteq -4.55 \quad \text{or} \quad x \doteq 0.55$$

vertex $x = \frac{-b}{2a} = \frac{-8}{2 \cdot 2} = -2$

$$y = 2(-2)^2 + 8(-2) - 5$$
$$= 8 - 16 - 5 = -13$$

vertex is $(-2, -13)$



$y = -2x^2 - 5x$ (see class notes)

$y = -3x^2 - x$

y-intercept $y = 0$

x-intercepts $0 = -3x^2 - x$

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

$x = 0$ or $-3x - 1 = 0$

$-3x = 1$

$x = -1/3$

vertex: $x = \frac{-b}{2a} = \frac{-(-1)}{2(-3)}$

$= \frac{-1}{6}$

$y = -3\left(\frac{-1}{6}\right)^2 - \left(\frac{-1}{6}\right)$

$= -3\left(\frac{1}{36}\right) + \frac{1}{6} = \frac{3}{36} = \frac{1}{12}$

vertex is $(-1/6, 1/12)$