

SM2 7.1: Quadratics with Technology

Problems:

Using a graphing calculator, identify the given properties for each graph.

1)	$y = 2x^2 + 8x - 9$ Vertex: <u>$(-2, -17)$</u> Roots: <u>$x = -4.9, .9$</u> Domain: <u>$(-\infty, \infty)$</u> Range: <u>$[-17, \infty)$</u> Axis of Symmetry: <u>$x = -2$</u> y-intercept: <u>$(0, -9)$</u> Increasing: <u>$(-2, \infty)$</u> Decreasing: <u>$(-\infty, -2)$</u> Positive: <u>$(-\infty, -4.9)(.9, \infty)$</u> Negative: <u>$(-4.9, .9)$</u>	2)	$y = -\frac{1}{3}x^2 - \frac{7}{3}x$ Vertex: <u>$(-3.5, 4.1)$</u> Roots: <u>$x = -7, 0$</u> Domain: <u>$(-\infty, \infty)$</u> Range: <u>$(-\infty, 4.1]$</u> Axis of Symmetry: <u>$x = -3.5$</u> y-intercept: <u>$(0, 0)$</u> Increasing: <u>$(-\infty, -3.5)$</u> Decreasing: <u>$(-3.5, \infty)$</u> Positive: <u>$(-7, 0)$</u> Negative: <u>$(-\infty, -7)(0, \infty)$</u>
3)	$y = -x^2 - 5x - 5$ Vertex: <u>$(-2.5, 1.25)$</u> Roots: <u>$x = -3.6, -1.4$</u> Domain: <u>$(-\infty, \infty)$</u> Range: <u>$(-\infty, 1.25]$</u> Axis of Symmetry: <u>$x = -2.5$</u> y-intercept: <u>$(0, -5)$</u> Increasing: <u>$(-\infty, -2.5)$</u> Decreasing: <u>$(-2.5, \infty)$</u> Positive: <u>$(-3.6, -1.4)$</u> Negative: <u>$(-\infty, -3.6)(-1.4, \infty)$</u>	4)	$f(x) = \frac{1}{4}x^2 - 16x + 7$ Vertex: <u>$(32, -249)$</u> Roots: <u>$x = .4, 63.6$</u> Domain: <u>$(-\infty, \infty)$</u> Range: <u>$[-249, \infty)$</u> Axis of Symmetry: <u>$x = 32$</u> y-intercept: <u>$(0, 7)$</u> Increasing: <u>$(32, \infty)$</u> Decreasing: <u>$(-\infty, 32)$</u> Positive: <u>$(-\infty, .4)(63.6, \infty)$</u> Negative: <u>$(.4, 63.6)$</u>

Find the indicated property of the function using the graphing calculator.

5)	$y = \frac{1}{2}x^2 + \frac{9}{2}x + 14$ Vertex: <u>$(-4.5, 3.875)$</u>	6)	$y = 2x^2 + 6x + 2$ Roots: <u>$x = -2.6, -.4$</u>
7)	$y = -2x^2 + 10x - 13$ Roots: <u>\emptyset</u>	8)	$y = -x^2 + 7x + 16$ y-intercept: <u>$(0, 16)$</u>
9)	$y = x^2 + 7x + 8$ Increasing: <u>$(-3.5, \infty)$</u>	10)	$y = -x^2 - 9x - \frac{77}{4}$ Negative: <u>$(-\infty, -5.5)(-3.5, \infty)$</u>
11)	$y = -x^2 - 5x - \frac{29}{4}$ Positive: <u>\emptyset</u>	12)	$f(x) = -x^2 - 3x - 3$ Range: <u>$(-\infty, -.75]$</u>