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Quadratic Formula / System of Equations

Examples and Vocabulary	Notes/Comments/Questions
<u>Quadratic Formula</u> The solutions to the equation $ax^2 + bx + c = 0, a \neq 0$ are $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	
① Find the x-intercepts of the parabolas f and k. a. $f(x) = 2x^2 - 4x - 1$ $0 = 2x^2 - 4x - 1$ $x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4(2)(-1)}}{2(2)}$ $= \frac{4 \pm \sqrt{16 + 8}}{4}$ $\frac{2 \pm \sqrt{6}}{2} = \frac{2(2 \pm \sqrt{6})}{4} = \frac{4 \pm 2\sqrt{6}}{4}$	y-int. = -1 vertex = $\left(\frac{-(-4)}{2(2)}, -3\right) = (1, -3)$ $a = 2 > 0$ $b = -4$ $c = -1$ $[-1, 3, 1] \times [4, 1, 1]$ $= \frac{4 \pm \sqrt{24}}{4} \sim \frac{4 \pm 4.90}{4}$ $= \frac{8.90}{4}, \frac{-.90}{4}$ $\approx 2.23, -.23$

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Examples and Vocabulary	Notes/Comments/Questions
$b. k(x) = -\frac{1}{2}x^2 - x + 2$ $0 = -\frac{1}{2}x^2 - x + 2$ $a = -\frac{1}{2}$ $b = -1$ $c = 2$ $x = \frac{-(-1) \pm \sqrt{(-1)^2 - 4(-\frac{1}{2})(2)}}{2(-\frac{1}{2})}$ $\text{vertex} = \left(\frac{-(-1)}{2(-\frac{1}{2})}, \frac{1}{-1} \right) = (-1, -1)$ $(-1, 2.5)$ $[-4, 2, 1] \times [-1, 3, 1]$	$y\text{-int.} = 2$ $\text{vertex} =$ $x\text{-ints.} \approx -3.24, 1.24$ $= \frac{1 \pm \sqrt{1 + 4}}{-1}$ $= \frac{1 \pm \sqrt{5}}{-1} \approx \frac{1 \pm 2.24}{-1}$ $= \frac{3.24}{-1}, \frac{-1.24}{-1}$ $= -3.24, 1.24$

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Examples and Vocabulary	Notes/Comments/Questions
② Find the domain of the function $f(x) = \frac{x}{3x^2 - 6x - 2}$ ③ Solve for T.	

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Examples and Vocabulary	Notes/Comments/Questions

④ Find the formula for the parabola passing through $(-2, 22)$, $(2, -2)$, and $(4, 22)$.

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Examples and Vocabulary	Notes/Comments/Questions

⑤ Find the formula for the parabola passing through $(-1, 5)$, $(1, 3)$, $(2, -1)$.

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Examples and Vocabulary	Notes/Comments/Questions
⑥ Find an appropriate graphing window for the parabola found in Problem 5.	