

MATHEMATICS 201-009-50

Precalculus
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Fall 2007

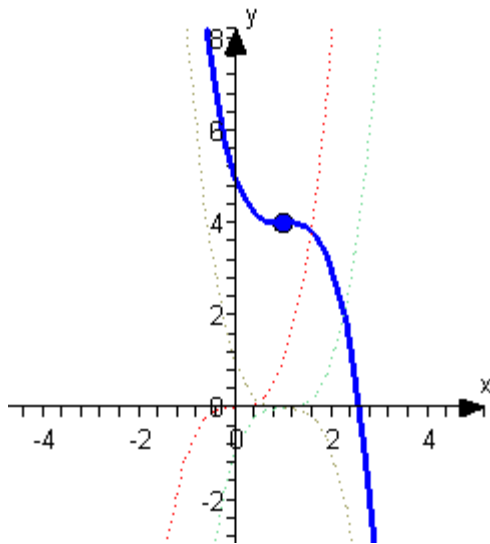
Quiz #7

This quiz is due **Tuesday October 2** at the beginning of the class.

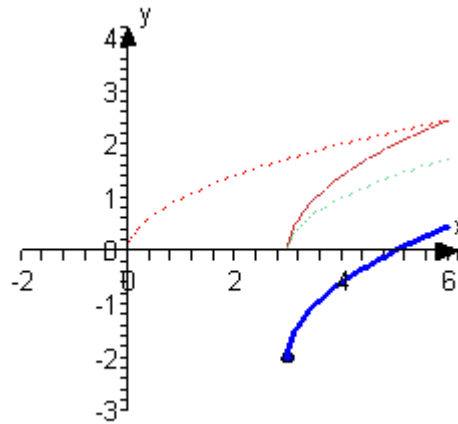
Question 1 (6 points)

Sketch the graph of the following function.

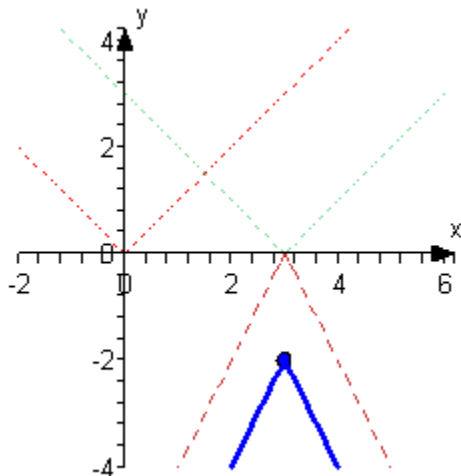
a) $f(x) = -(x-1)^3 + 4$



b) $f(x) = \sqrt{2x-6} - 2$



c) $f(x) = -2|x-3| - 2$



Question 2 (2 points)

Sketch the graph of the parabola $f(x) = x^2 - 2x - 15$ by finding the vertex as well as the intercepts.

$$\begin{aligned} f(x) &= x^2 - 2x - 15 \\ &= x^2 - 2x + \left(\frac{-2}{2}\right)^2 - 15 - \left(\frac{-2}{2}\right)^2 \\ &= (x-1)^2 - 16 \end{aligned}$$

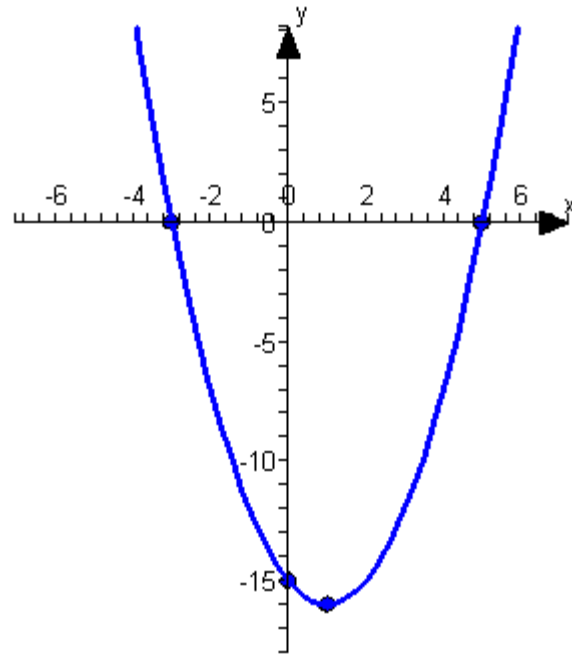
Vertex: $(1, -16)$

x-intercepts: $x^2 - 2x - 15 = 0$

$$(x-5)(x+3) = 0$$

$$x = -3, 5$$

y-intercept: $f(0) = -15$

**Question 3 (2 points)**

Find the equation of the parabola with vertex $(3, -1)$ and whose graph passes through the point $(2, -3)$.

$$f(x) = a(x-3)^2 - 1$$

$$-3 = a(2-3)^2 - 1$$

$$a = -2$$

Ergo the parabola is $f(x) = -2(x-3)^2 - 1$

$$= -2x^2 + 12x - 19$$