

+33

Show your work. You will not receive credit if you do not clearly show how you are obtaining your answers. Do all work on the exam.

1. (12 points) Solve the following quadratic equations.

a. $3x^2 = 13x + 10$

$$0 = 3x^2 + 13x + 10$$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$\frac{-13 \pm \sqrt{13^2 - 4(-3)(10)}}{2(-3)}$$

$$x^2 + 3x - x - 3 = 1$$

$$x^2 + 3x - x - 3 - 1 = 0$$

$$x^2 + 2x - 4 = 0$$

-4

2. (8 points) The graph of a quadratic function $y = f(x)$ is shown in the figure.

a. Find the vertex and axis of symmetry of the parabola.

The vertex is $(1, 3)$

Axis of symmetry $x = 1$

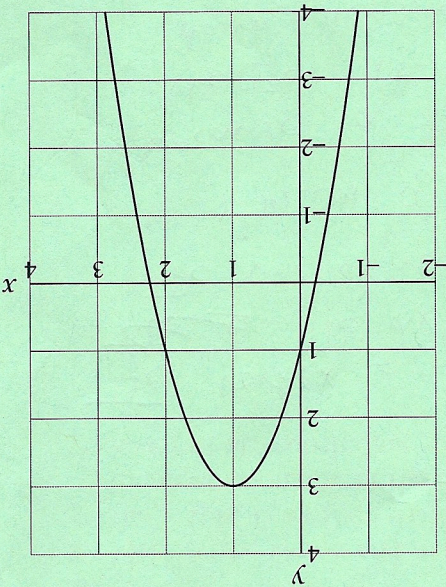
-1

b. Construct an equation for the function.

$$f(x) = a(x-h)^2 + k$$

$$f(x) = a(x-1)^2 + k$$

-3



-10

$$\frac{\sqrt{b^2 - 4ac}}{2a} = \frac{-13 \pm \sqrt{13^2 - 4(-3)(10)}}{2(-3)}$$

$$= \frac{-13 \pm \sqrt{169 + 120}}{-6}$$

~~The following work is not correct~~

$$\frac{-13 \pm \sqrt{17}}{2} = \frac{3}{2}$$

-2