Your name: Friday May 13, 2022

MPM2D Unit 5 Test A	**TOTAL / 35**

Communication / 3 • One = sign per line, where appropriate • Coordinates given as (x , y) • x-intercepts written as *x* = ___ • Units on answers to word problems	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $x = \frac{-b}{2a}$

1. State the x-intercepts of $y = \frac{-1}{8}(7x + 1)(x + 13)$ [1 K]

2. Find the x-intercepts of $y = 5x^2 - 11x + 2$ [3 A]

3. Find the x-intercepts of $y = -4(x + 3)^2 + 324$ **using opposite operations**. [4 A]

4. Find the coordinates of the vertex of $y = 3x^2 - 18x + 11$ **by completing the square.** [3 T]

5. Solve this equation **by factoring**. [5 A]

$2x(15x + 2) = 2$

6. Solve this equation **with the quadratic formula**.
Give your answer(s) to 2 decimal places, if necessary. [4 K]

$10 = 2x^2 - 17x + 25$

7. Solve this equation **with opposite operations**. [4 A]

$7(x + 1)^2 - 100 = 747$

8. A trebuchet launches a boulder from a kingdom's castle onto an opposing army below.

The boulder's height is modeled by $\mathbf{y = -16x^2 + 32x + 560}$, where the boulder is *y* feet above the ground after *x* seconds.

a) What is the boulder's maximum height above the ground? [3 T]

b) How long after launch does the boulder hit the ground? [3 T]
This equation is factorable, but you *can* use the quadratic formula if you prefer.

c) What is the initial height of the boulder? [2 T]