

# Quiz 1, Business Calculus

Summer Session I, 2012

Name: \_\_\_\_\_

Key

1. (5 points) Find the roots of the quadratic equation  $5x^2 - 3x - 2 = 0$  either by factoring, or by using the quadratic formula  $\left(\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}\right)$ .

$$(5x + 2)(x - 1) = 0 \quad \checkmark \checkmark \checkmark$$

$$\Rightarrow 5x + 2 = 0$$

$$x = -\frac{2}{5}$$

✓

$$\text{or } x - 1 = 0$$

$$x = 1$$

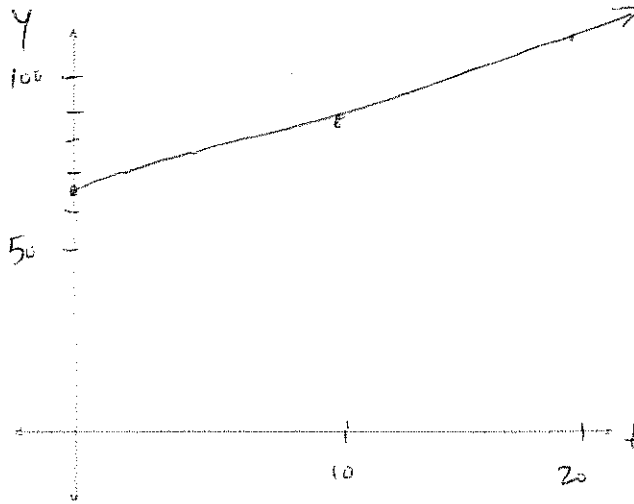
✓

2. (5 points) The output of nuclear plants in the US (as a percent of total capacity) is given by the equation

$$y = 2t + 65$$

where  $t$  is measured in years, with  $t = 0$  corresponding to 1990.

- (a) Sketch the line with the given equation:



- (b) What was the percentage output in 1997?

$$t = 7 \Rightarrow y = 2 \cdot 7 + 65 \\ = 79\%$$

- (c) What will the percentage output be in 2015? Does this make sense? Why or why not?

$$t = 25 \Rightarrow y = 2 \cdot (25) + 65 \\ = 50 + 65 = 115$$

Does not make sense b/c they cannot operate at greater than 100% capacity.