

# Solutions

**No Work = No Credit. Write Legibly. Box your final result.**

1. 10 points Find the points on the curve  $y = 2x^3 + 3x^2 - 12x + 1$  where the tangent is horizontal.

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A horizontal tangent has a slope of zero. Thus, we must find  $x$  such that  $y'(x) = 0$ . The derivative of  $y(x)$  is given by

$$y'(x) = 6x^2 + 6x - 12. \quad (1)$$

Setting (1) to equal zero, yields

$$x^2 + x - 2 = 0. \quad (2)$$

Solving (2) for  $x$ , we obtain  $x = -2, 1$ . Finally, substituting  $x = -2, 1$  into  $y(x)$ , yields the two points given by

$$\text{Point 1} = \boxed{(-2, 21)}$$

$$\text{Point 2} = \boxed{(1, -6)}.$$