

# Math 1A: True/False quick quiz

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<http://math.berkeley.edu/~theo/f/09Spring1A/>

Decide whether each of the following statements is TRUE or FALSE. These exercises are from the Chapter 3 review in *Single Variable Calculus: Early Transcendentals for UC Berkeley* by James Stewart.

1. If  $f$  and  $g$  are differentiable, then:

$$\frac{d}{dx}[f(x) + g(x)] = f'(x) + g'(x)$$

2. If  $f$  and  $g$  are differentiable, then:

$$\frac{d}{dx}[f(x) \times g(x)] = f'(x) \times g'(x)$$

3. If  $f$  and  $g$  are differentiable, then:

$$\frac{d}{dx}[f(g(x))] = f'(g(x))g'(x)$$

4. If  $f$  is differentiable, then:

$$\frac{d}{dx}\sqrt{f(x)} = \frac{f'(x)}{2\sqrt{f(x)}}$$

5. If  $f$  is differentiable, then:

$$\frac{d}{dx}f(\sqrt{x}) = \frac{f'(x)}{2\sqrt{x}}$$

6. If  $y = e^2$ , then  $y' = 2e$ .

7.  $\frac{d}{dx}(10^x) = x10^{x-1}$

8.  $\frac{d}{dx}(\ln 10) = \frac{1}{10}$

9.  $\frac{d}{dx}(\tan^2 x) = \frac{d}{dx}(\sec^2 x)$

10.  $\frac{d}{dx}|x^2 + x| = |2x + 1|$

11. If  $g(x) = x^5$ , then  $\lim_{x \rightarrow 2} \frac{g(x) - g(2)}{x - 2} = 80$ .

12. An equation of the tangent line to the parabola  $y = x^2$  at  $(-2, 4)$  is  $y - 4 = 2x(x + 2)$ .