

# Classroom Voting Questions: Calculus I

## 3.2 The Exponential Function

1.  $\frac{d}{dx}(e^x)$  is
  - (a)  $xe^{x-1}$
  - (b)  $e^x$
  - (c)  $e^x \ln x$
  - (d) 0
  - (e) Cannot be determined from what we know
  
2.  $\frac{d}{dx}(5^x)$  is
  - (a)  $x5^{x-1}$
  - (b)  $5^x$
  - (c)  $5^x \ln x$
  - (d)  $5^x \ln 5$
  - (e) Cannot be determined from what we know
  
3.  $\frac{d}{dx}(x^e)$  is
  - (a)  $ex^{e-1}$
  - (b)  $x^e$
  - (c)  $x^e \ln x$
  - (d)  $ex$
  - (e) Cannot be determined from what we know
  
4.  $\frac{d}{dx}(e^7)$  is
  - (a)  $7e^6$
  - (b)  $e^7$
  - (c)  $e^7 \ln 7$
  - (d) 0
  - (e) Cannot be determined from what we know

5.  $\frac{d}{dx}(3e^x)$  is
- (a)  $3xe^{x-1}$
  - (b)  $3e^x$
  - (c)  $e^x \ln 3$
  - (d) 3
  - (e) Cannot be determined from what we know

6.  $\frac{d}{dx}(2 \cdot 5^x)$  is
- (a)  $10^x$
  - (b)  $2 \cdot 5^x$
  - (c)  $10^x \ln 10$
  - (d)  $2 \cdot 5^x \ln 5$
  - (e)  $10^x \ln 5$
  - (f) Cannot be determined from what we know

7.  $\frac{d}{dx}(xe^x)$  is
- (a)  $x^2e^{x-1}$
  - (b)  $xe^x$
  - (c)  $e^x \ln x$
  - (d) Cannot be determined from what we know

8. If  $\ln x - y = 0$ , find  $\frac{dx}{dy}$ .
- (a)  $\frac{dx}{dy} = e^x$
  - (b)  $\frac{dx}{dy} = e^{-x}$
  - (c)  $\frac{dx}{dy} = e^y$
  - (d)  $\frac{dx}{dy} = e^{-y}$
  - (e) Cannot be determined from this expression

9.  $\frac{d}{dx}(e^{x+2})$  is
- (a)  $(x+2)e^{x+1}$

- (b)  $e^2e^x$
- (c)  $e^2$
- (d) Cannot be determined from what we know

10.  $\frac{d}{dx}(e^{2x})$  is

- (a)  $e^{2x}$
- (b)  $e^2e^x$
- (c) 0
- (d) Cannot be determined from what we know

11. If  $u = 5^v$ , find  $\frac{d^2u}{dv^2}$ .

- (a)  $\frac{d^2u}{dv^2} = 0$
- (b)  $\frac{d^2u}{dv^2} = 5^v$
- (c)  $\frac{d^2u}{dv^2} = 5^v \ln 5$
- (d)  $\frac{d^2u}{dv^2} = 5^v (\ln 5)^2$
- (e)  $\frac{d^2u}{dv^2} = v(v-1)5^{v-2}$
- (f) Cannot be determined from what we know

12. If  $u = ve^w + xy^v$ , find  $\frac{du}{dv}$ .

- (a)  $\frac{du}{dv} = e^w + xy^v \ln y$
- (b)  $\frac{du}{dv} = ve^w + xy^v \ln y$
- (c)  $\frac{du}{dv} = e^w + xy^v \ln v$
- (d)  $\frac{du}{dv} = ve^w + xy^v \ln v$
- (e) Cannot be determined from what we know

13. Find the equation of the line that is tangent to the function  $g(x) = 2e^x$  at  $x = 1$ .

- (a)  $y = 2e^x x$
- (b)  $y = 2ex$
- (c)  $y = 2e^x x + 2e$
- (d)  $y = 2ex + 2e$
- (e) None of the above