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) $e^2 e^x$

(c) e^2

(d) Cannot be determined from what we know

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

(a) e^{2x}

(b) $e^2 e^x$

(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