Readiness Assurance Test

Choose the most appropriate response for each question.

31) Solve $y' = 2xy$.

(a) $y = ke^{x^2}$ (b) $y = e^{x^2} + C$ (c) $y = ke^{2x}$ (d) $y = e^{2x} + C$

32) Solve $y' = 3y^2$.

(a) $y = -\frac{1}{3x} + C$ (b) $y = -\frac{1}{3x+C}$ (c) $y = x^3 + C$ (d) $y = x^{\frac{1}{3}} + C$

33) If $f(x, y) = \frac{x}{y}$, compute $\frac{\partial f}{\partial y}$.

(a) $\frac{-x}{y}$ (b) $\frac{-x}{y^2}$ (c) $\frac{1}{y^2}$ (d) $\frac{1}{y}$

34) If $f(x, y) = e^{x^2+y^2}$, compute $\frac{\partial f}{\partial x}$.

(a) e^{x^2} (b) $e^{x^2+y^2}$ (c) $2xe^{x^2}$ (d) $2xe^{x^2+y^2}$

35) If $f(x, y) = \sin(xy^2)$, compute $\frac{\partial f}{\partial y}$.

(a) $\cos(xy^2)$ (b) $2y\cos(xy^2)$ (c) $2xy\cos(xy^2)$ (d) $xy^2\cos(xy^2)$

36) At how many points of $\mathbb{R}^2$ does the function $f(x, y) = \sqrt{x^2 + y^2}$ fail to be defined and continuous?

(a) Infinitely many (b) 2 (c) 1 (d) 0

37) At how many points of $\mathbb{R}^2$ does the function $f(x, y) = \frac{1}{\sqrt{x^2+y^2}}$ fail to be defined and continuous?

(a) 0 (b) 1 (c) 2 (d) Infinitely many

38) At how many points of $\mathbb{R}^2$ does the function $f(x, y) = \sqrt{x^2 - y^2}$ fail to be defined and continuous?

(a) 0 (b) 1 (c) 2 (d) Infinitely many

39) Let $f(x)$ be a function with $f(3) = 2$ and $f'(3) = -1$. Use a linear approximation to estimate $f(3.2)$.

(a) 2.2 (b) 2.1 (c) 1.9 (d) 1.8

40) Let $f(x)$ be a function with $f(0) = 3$ and $f'(x) = e^{x^2}$. Use a linear approximation to estimate $f(0.3)$.

(a) 1 (b) 1.09 (c) 3.3 (d) 3.9