

## Quiz Review 2 KEY

$$1) y - 4 = (4 \ln 4 + 12)(x - 1)$$

$$2) f'(x) = \frac{1}{\ln 15(11x)} \cdot 11 = \frac{1}{x \ln 15}$$

$$3) \frac{1}{3} \ln |5 + e^{3x}| + C$$

$$4) y = \frac{2^{\tan x}}{\ln 2} + C$$

$$5) e^2 - e^{1/2}$$

# Log Quiz Review

FR  
KEY

$$f(x) = x \cdot e^{-\frac{1}{2}x^2}$$

$$a) f'(x) = x \cdot e^{-\frac{1}{2}x^2} \cdot -x + e^{-\frac{1}{2}x^2}$$

$$f'(x) = -x^2 \cdot e^{-\frac{1}{2}x^2} + e^{-\frac{1}{2}x^2}$$

$$f'(x) = e^{-\frac{1}{2}x^2} (-x^2 + 1) = 0$$

$$-x^2 + 1 = 0$$

$$-x^2 = -1$$

$$x^2 = 1$$

$$x = \pm 1$$



Inc:  $(-1, 1)$

Dec:  $(-\infty, -1) \cup (1, \infty)$

$$(-x e^{-\frac{1}{2}x^2})$$

$$b) f''(x) = e^{-\frac{1}{2}x^2} (-2x) + (-x^2 + 1)(e^{-\frac{1}{2}x^2} \cdot -x)$$

$$f''(x) = -2x e^{-\frac{1}{2}x^2} + x^3 e^{-\frac{1}{2}x^2} - x e^{-\frac{1}{2}x^2}$$

$$f''(x) = x e^{-\frac{1}{2}x^2} (-2 + x^2 - 1)$$

$$f''(x) = x e^{-\frac{1}{2}x^2} (x^2 - 3) = 0$$

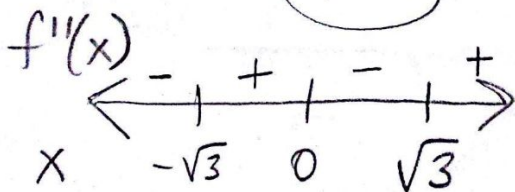
$$x e^{-\frac{1}{2}x^2} = 0$$

$$x = 0$$

$$x^2 - 3 = 0$$

$$x^2 = 3$$

$$x = \pm\sqrt{3}$$



$$c) \frac{1}{b-a} \int_a^b x e^{-\frac{1}{2}x^2} dx$$

$$= \frac{1}{2} \cdot \int_0^0 e^u du$$

$$= \frac{1}{2} \cdot \int_{-2}^0 e^u du$$

$$= \frac{1}{2} e^u \Big|_{-2}^0 = \frac{1}{2} e^0 - \frac{1}{2} e^{-2}$$

$$= \frac{1}{2} - \frac{1}{2e^2} = \frac{e^2}{2e^2} - \frac{1}{2e^2}$$

$$= \frac{e^2 - 1}{2e^2}$$

$$u = -\frac{1}{2}x^2$$

$$du = -x dx$$

$$-du = x dx$$

$$u(0) = 0$$

$$u(2) = -2$$

d) y-int: (0,0)      x-int: (0,0)

