

October 18

If you could change one thing about
this class, what would it be?
What is one thing you would keep
the same?



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Students will verbally explain how to
use the derivative to give
characteristics of a function

(using the words:
increasing, decreasing, positive, negative, zero...)



6. $f(x) = xe^{-x^2/2}, \quad -2 \leq x \leq 2$

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

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

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

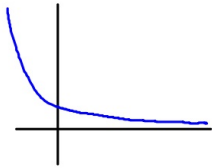
$$0 = e^{-\frac{x^2}{2}}(1 - x^2)$$

$$0 \neq e^{-\frac{x^2}{2}}$$

$$0 = 1 - x^2$$

$$\frac{+x^2 \quad +x^2}{\sqrt{x^2} = 1}$$

$$x = -1, 1$$



CP	-1	1
sign f'	-	+
behav f	dec	inc

max at $x=1$

min at $x=-1$

Global/Absolute

$$f(-1) = (-1)e^{-(-1)^2/2} = -.606 \rightarrow \text{smallest \#}$$

Global Min

$$f(1) = (1)e^{-1^2/2} = .606 \rightarrow \text{biggest \#}$$

Global Max

$$f(-2) = -2e^{-(-2)^2/2} = -.271$$

$$f(2) = 2e^{-2^2/2} = .271$$