

Office Hours!

Instructor:

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Office Hours:

Mondays 2–3PM

Tuesdays 10:30–11:30AM

Thursdays 1–2PM

or by appointment

Office:

South Hall 6510

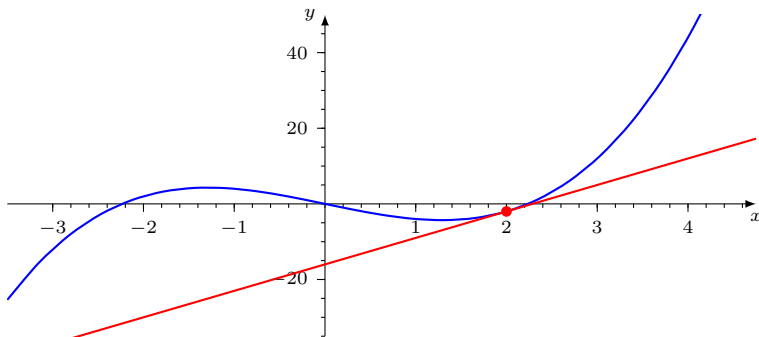
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Review: Meaning of Derivatives

1. Find the equation of the tangent line to $y = x^3 - 5x$ at $x = 2$.

A $y = 2x - 6$ B $y = 16x - 7$ C $y = 7x + 16$ D $y = 7x - 16$

D

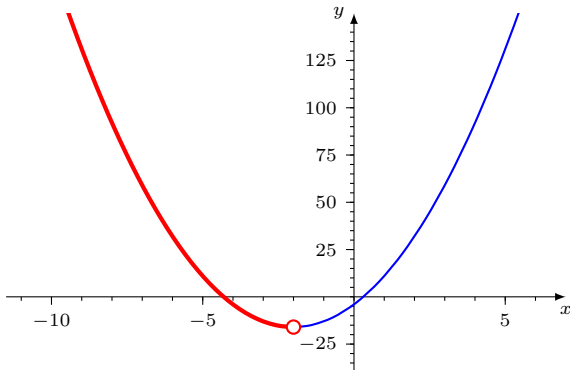


Review: Meaning of Derivatives 2

2. Where is $f(x) = 3x^2 + 12x - 4$ decreasing?

A $x < -2$ B $x > -2$ C $x < 2$ D $x > 2$ E $x = 2$

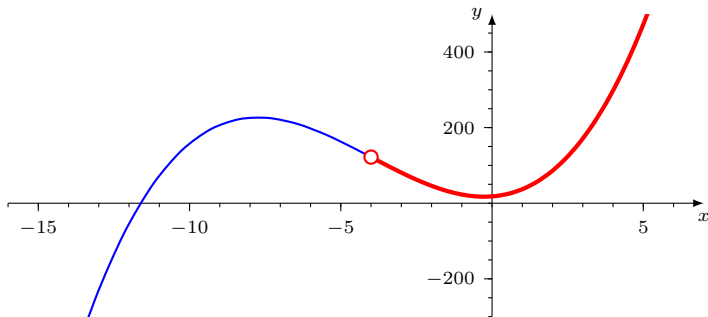
A



Review: Meaning of Derivatives 3

3. Where is $f(x) = x^3 + 12x^2 + 6x + 18$ concave up?

A $x < -4$ B $x > -4$ C $x > -2$ D $x < -2$ B



Review: Derivatives

4. Suppose

$$f(x) = 2x^4 - 3x^2 + 5x + 3$$

Click as you compute the following:

(A) $f'(x) = 8x^3 - 6x + 5$

(B) $f''(x) = 24x^2 - 6$

(C) $f'''(x) = 48x$

(D) $\frac{d^4 f}{dx^4} = 48$

5. Find the **minimum** of $f(x) = 2x^2 + 8x + 3$

A = -5 B = -2 C = 0 D = 2 E = 5

A

Derivatives (cont'd)

6. Suppose $f(x) = x^2 - 4x + 5$. Click as you do the following:

(A) What is the slope of the graph when $x = 3$? $f'(3) = 2$

(B) What is the equation of the tangent line to the graph
 $y = f(x)$ at $x = 3$? $y = 2x - 4$

(C) Is the graph concave up or concave down?
 $f''(x) = 2 > 0$; concave up

Hint: Draw a picture!

How many did you get?

A = 3 B = 2 C = 1 D = 0 E = **Don't press this button!**

Objects in Motion

7. A gorilla standing on top of Campbell Hall and throws a banana at a monkey on top of Cheadle Hall 100 meters away.
- $h(t) = 35 + 50t - 5t^2$ meters is the height of the banana t seconds after it is thrown
 - Banana lands at the monkey's feet 6 seconds after it is thrown

Click as you do the following:

- (A) Draw a diagram showing Campbell Hall, Cheadle Hall, and the flight path of the banana.
- (B) How high is Cheadle Hall? $h(6) = 155$ m
- (C) How high above ground did the banana fly? $h(5) = 160$ m
- (D) How high above Cheadle Hall did the banana fly? 5 m
- (E) For how many seconds of the flight was the banana gaining height? until $h'(t) = 0$; until $t = 5$ seconds
- (A) How fast was the banana going when it landed? $|h'(6)| = 10$ m/s