

# Calculus

F 6 April 2012

RESET THE  
SESSION

SET THE  
PARTICIPANT  
LIST

PLUG IN THE  
RECEIVER

New topics (see diary)

Topics covered are in bounds

Boxed answers agree with  
TurningPoint answers

Points agree with  
TurningPoint points

Points total to 100

Cover the look ahead

QUIZ  
FOLLOWS

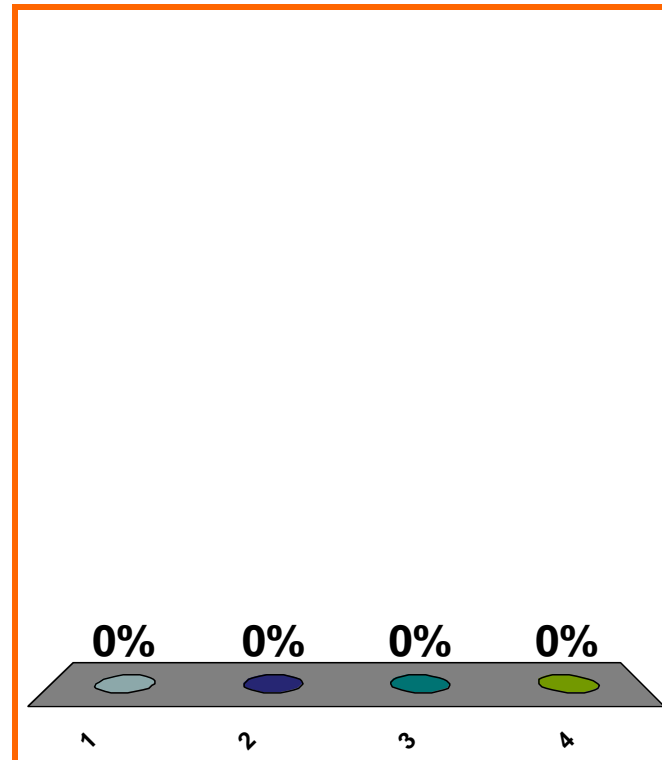
$$\int_1^3 (\sin \theta) d\theta = ??$$

(a)  $[\cos \theta]_{\theta: \rightarrow 1}^{\theta: \rightarrow 3}$

(b)  $(\cos \theta) + C$

(c)  $[-\cos \theta]_{\theta: \rightarrow 1}^{\theta: \rightarrow 3}$

(d) none of the above



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

0 of 5

Topic 0610

10 pts

5

degree in  $x$  of

$$\int_0^x (5t^3 + 2t - 1) dt$$

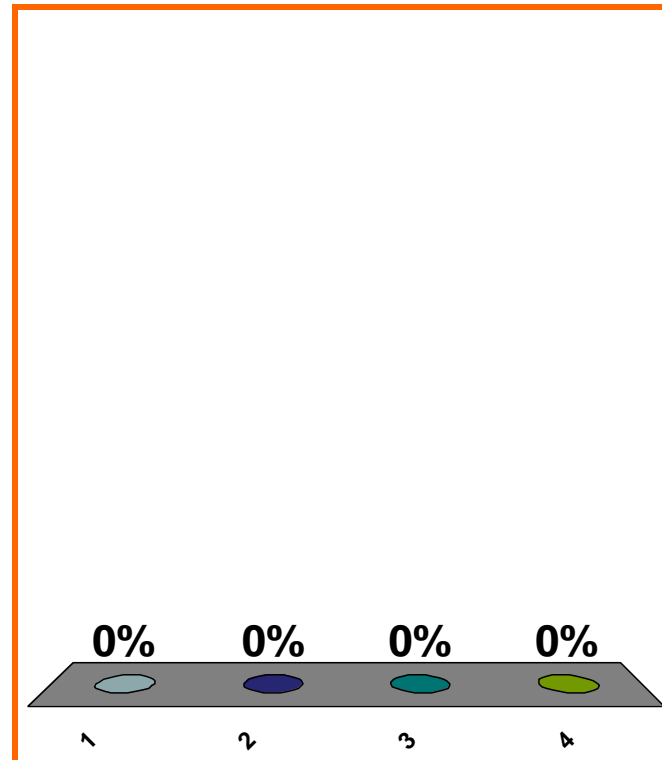
(a) 1

(b) 2

(c) 3

(d) none of the above

Correct answer: 4



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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Topic 0610

10 pts

6

degree in  $n$  of

$$\sum_{j=1}^n (5j^3 + 2j - 1)$$

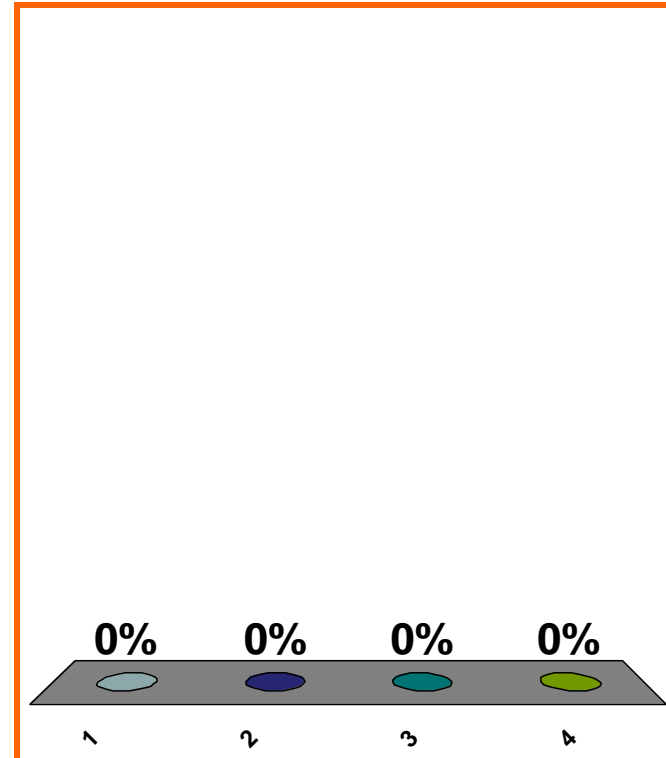
(a) 1

(b) 2

(c) 3

(d) none of the above

Correct answer: 4



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

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Topic 0070

10 pts

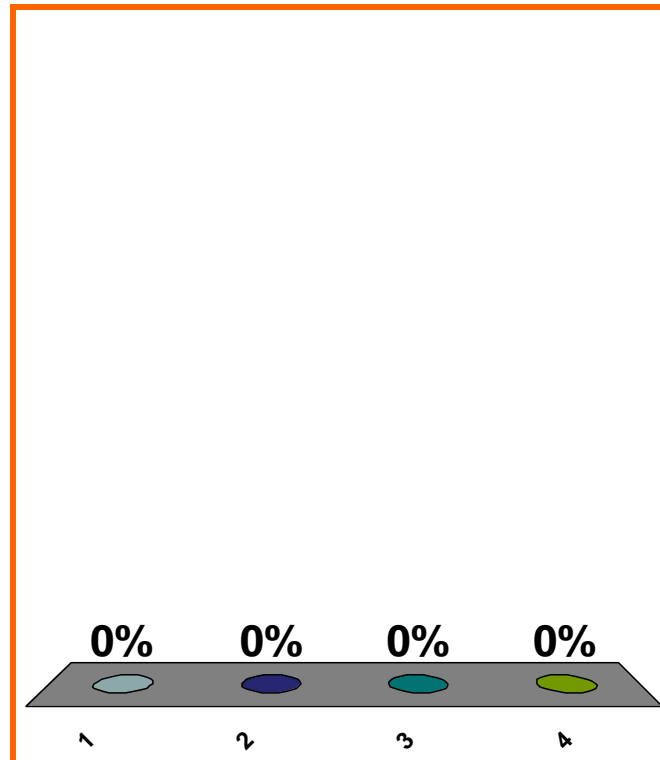
$$\frac{d}{dx} \left[ \int_1^x \cos t \, dt \right]$$

(a)  $-\cos x$

(b)  $(\sin 1) - (\sin x)$

(c)  $\cos x$

(d) none of the above



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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0 of 5

Topic 0610

10 pts

8



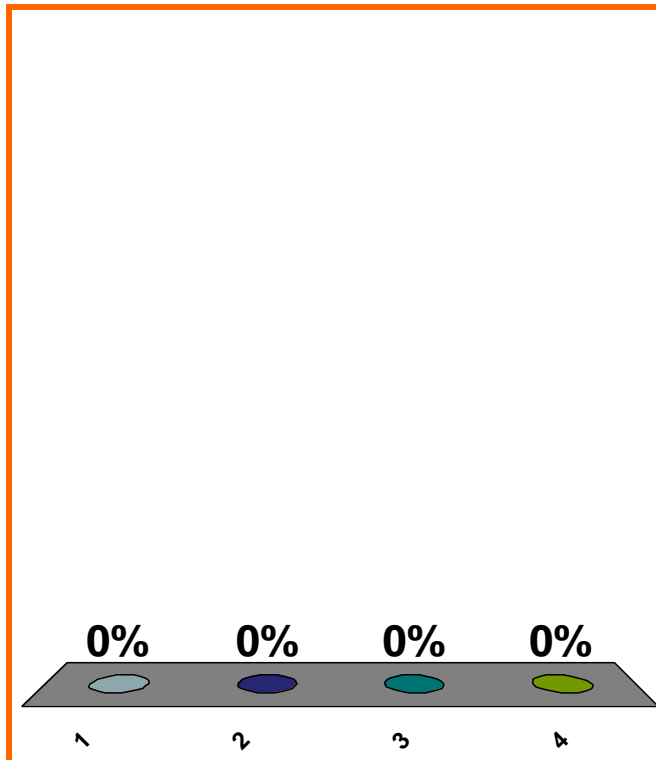
$$\frac{d}{dx} \left[ \int_x^1 \cos t \, dt \right]$$

(a)  $-\cos x$

(b)  $(\sin 1) - (\sin x)$

(c)  $\cos x$

(d) none of the above



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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Topic 0610

10 pts

9

$$F'(t) = e^{t^2}$$

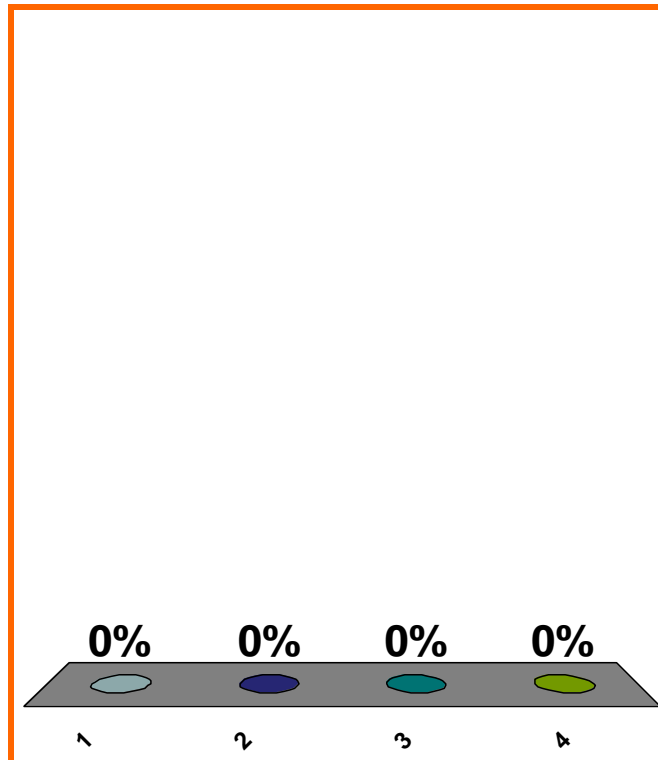
$$\frac{d}{dx} \left[ \int_{x^2}^{x^5} e^{t^2} dt \right]$$

(a)  $\frac{d}{dx} \left[ (F(x^5)) - (F(x^2)) \right]$

(b)  $\frac{d}{dx} \left[ (F(x))^5 - (F(x))^2 \right]$

(c)  $\frac{d}{dx} \left[ (F(x^5))(5x^4) - (F(x^2))(2x) \right]$

(d) none of the above



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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Topic 0620

10 pts

10

$$F'(t) = e^{t^2}$$

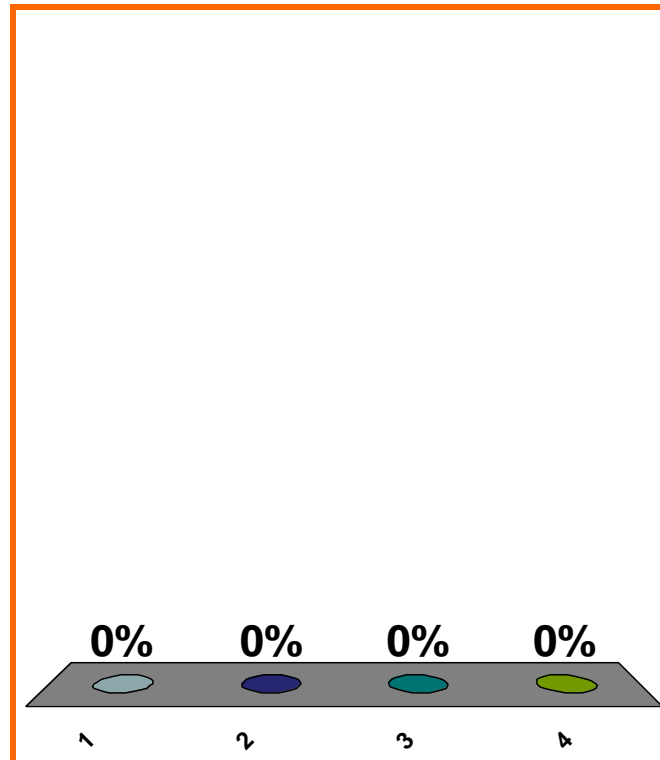
$$\frac{d}{dx} [(F(x^5)) - (F(x^2))]$$

(a)  $(F'(x^5))(5x^4) - (F'(x^2))(2x)$

(b)  $(F(x^5))(5x^4) - (F(x^2))(2x)$

(c)  $(F'(x^5)) - (F'(x^2))$

(d) none of the above



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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Topic 0620

10 pts

11

$n$ th midpt Riem. sum

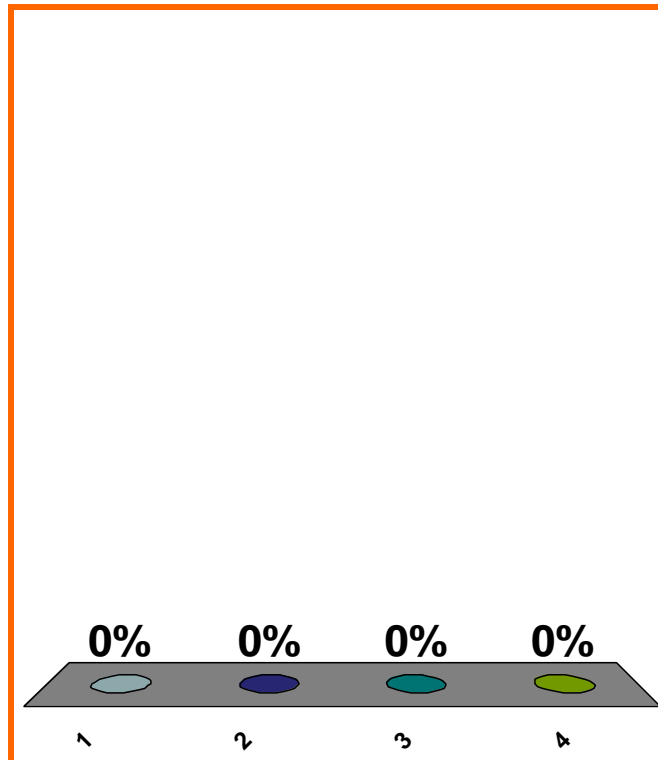
for  $\int_1^2 e^x dx$

(a)  $\sum_{j=1}^n \left[ \frac{1}{n} \right] \left[ e^{1+(j/n)} \right]$

(b)  $\sum_{j=1}^n \left[ \frac{1}{n} \right] \left[ e^{1+(j/n)-(1/(2n))} \right]$

(c)  $\sum_{j=1}^n \left[ \frac{1}{n} \right] \left[ e^{1+(j/n)-(1/n)} \right]$

(d) none of the above



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

$$(a) \sum_{j=0}^{n-1} \left[ \frac{4}{n} \right] \left[ (2 + (4j/n))^5 \right]$$

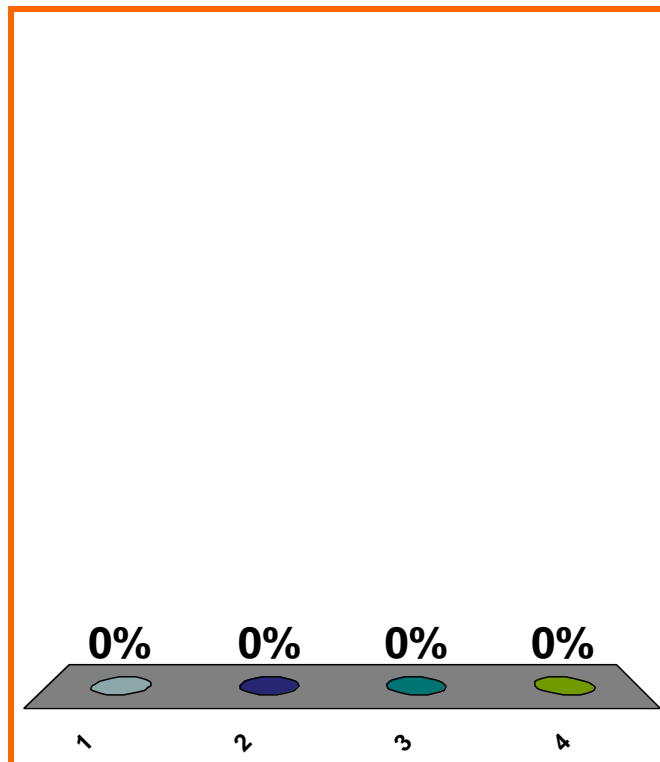
$n$ th left endpt Riem. sum

for  $\int_2^6 x^5 dx$

$$(b) \sum_{j=0}^{n-1} \left[ \frac{4}{n} \right] \left[ (2 + (4j/n) - (4/n))^5 \right]$$

$$(c) \sum_{j=0}^{n-1} \left[ \frac{4}{n} \right] \left[ (2 + (4j/n) - (4/(2n)))^5 \right]$$

(d) none of the above



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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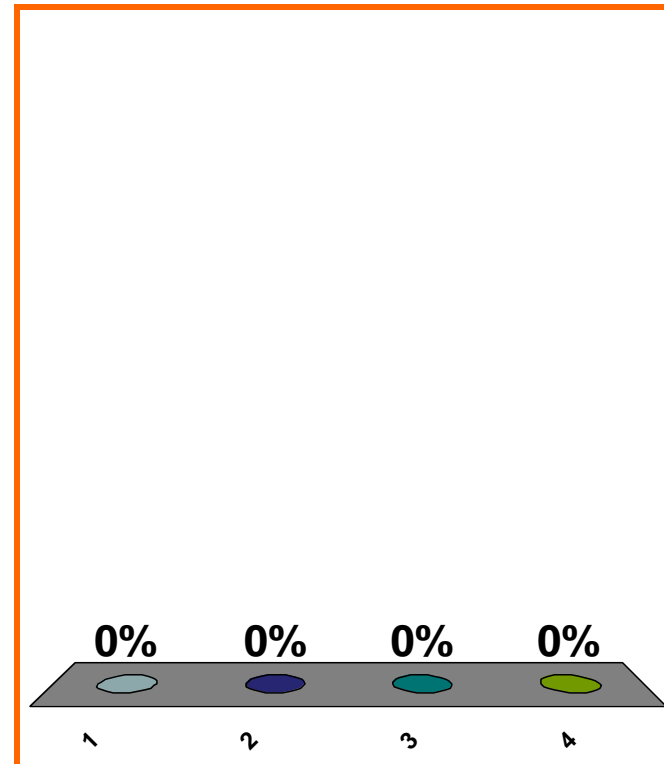
$f(5) = -2, \quad f'(5) = 23$   
Linear approx. to  $f(x)$   
at  $x = 5$ ?

(a)  $23 - 2(x - 5)$

(b)  $5x^2 + 23x - 2$

(c)  $-2 + 23(x - 5)$

(d) none of the above



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

Newton's method  
for solving  $e^{5x} + x^2 = 7$ :

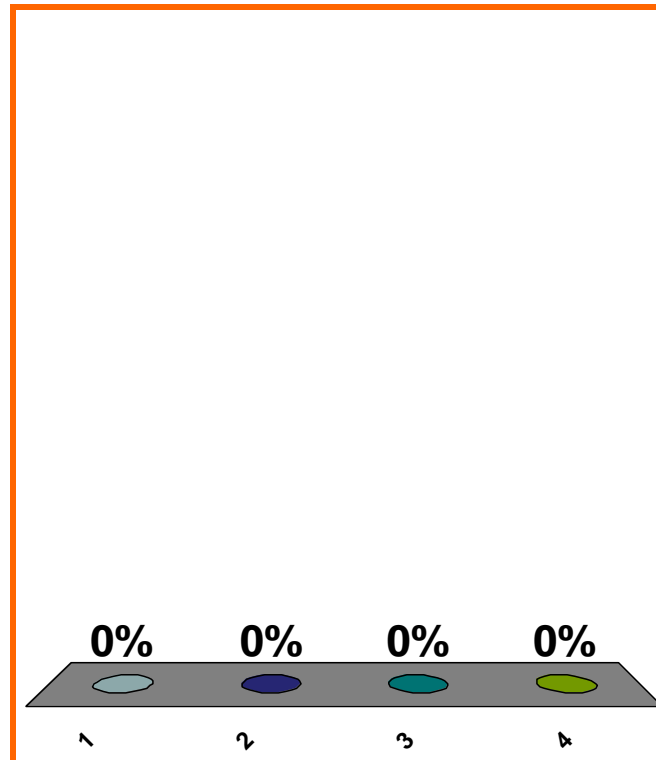
$$x_{n+1} = ??$$

$$(a) \quad x_n - \frac{e^{5x_n} + x_n^2}{e^{5x_n} + 2x_n}$$

$$(b) \quad x_n - \frac{e^{5x_n} + x_n^2 - 7}{5e^{5x_n} + 2x_n}$$

$$(c) \quad x_n - \frac{e^{5x_n} + x_n^2 - 7}{e^{5x_n} + 2x_n}$$

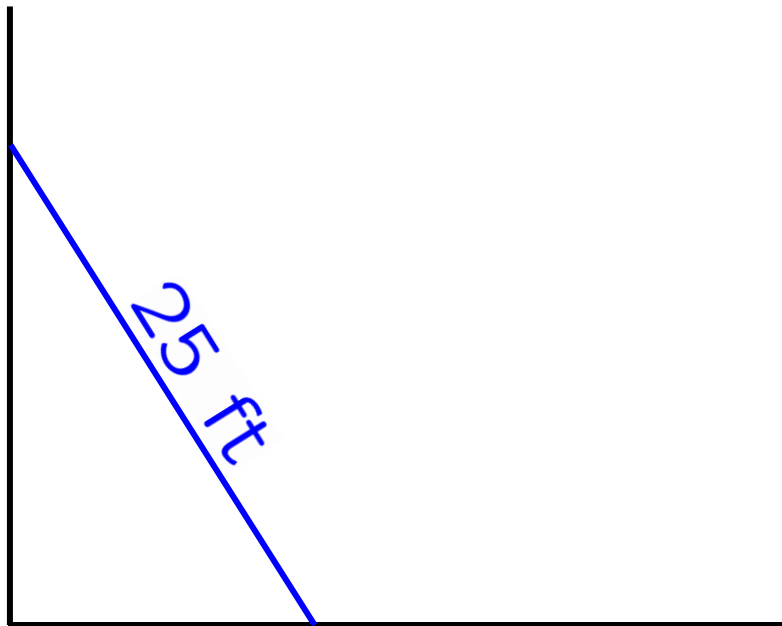
(d) none of the above



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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# LOOK BACK (RELATED RATES)

A 25 ft ladder is leaning against a vertical wall. The floor is slightly slippery and the foot of the ladder slips away from the wall at a rate of 0.2 in/sec. **How fast** is the top of the ladder sliding down the wall **when** the top is 20 ft above the floor?





# LOOK AHEAD

Integration by substitution

Area in a circle

Volume in a sphere

SAVE THE  
SESSION  
DATA

RETURN TO  
PRESENTATION