Calculus
F 3 March 2012

RESET THE SESSION

SET THE PARTICIPANT LIST

PLUG IN THE RECEIVER

Look at an unused file

Cover the look ahead

Topics covered are in bounds

Boxed answers agree with TurningPoint answers

Points agree with TurningPoint points

Points total to 100

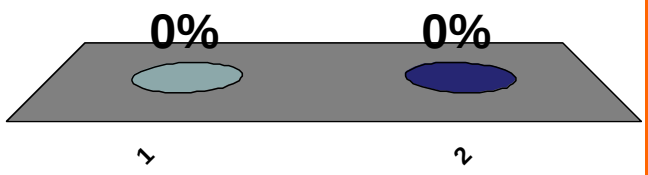
QUIZ
FOLLOWS

T or F:

$$\forall x \in \mathbb{R}, \quad \ln(e^x) = x$$

(a) True

(b) False



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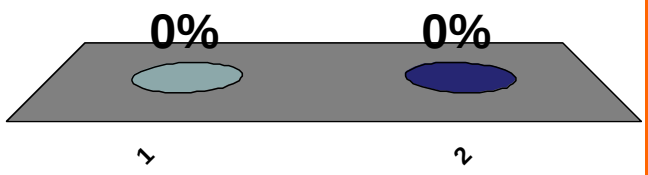
T or F:

$$\forall x \in \mathbb{R}, \quad e^{\ln x} = x$$

(a) True

(b) False



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0 of 5

precalc

0 pts

$$[d/dx][(\cos y) + 2y^3] = \text{??}$$

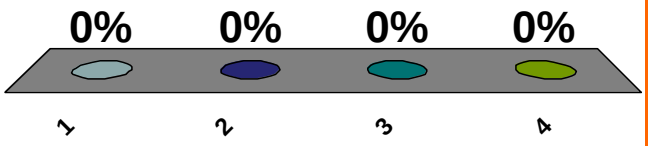
(a) $-(\sin y) + 6y^2$

(b) $-(\sin y') + 6(y')^2$

(c) $-(\sin y)y' + 6y^2$

(d) none of the above

Correct answer: $-(\sin y)y' + 6y^2y'$



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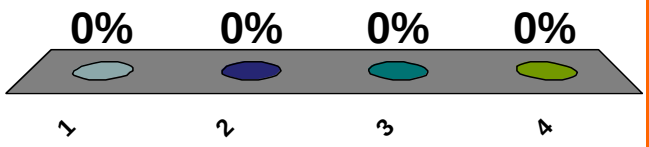
$$[d/dx][\tan(xy)] = ??$$

(a) $-[\sec^2(xy)][y + xy']$

(b) $[\sec^2(xy)][y + xy']$

(c) $-[\sec^2(xy)][y + x]$

(d) none of the above



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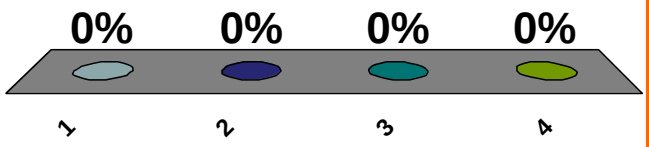
$$[d/dx][xe^y + y] = \text{??}$$

(a) $e^y + xe^y + 1$

(b) $e^y + xe^y y' + y'$

(c) $e^y + xe^y + y'$

(d) none of the above



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$$[d/dx][xe^y + y] = e^y + xe^y y' + y'$$
$$= e^y + (xe^y + 1)y'$$

$$xe^y + y = 1$$

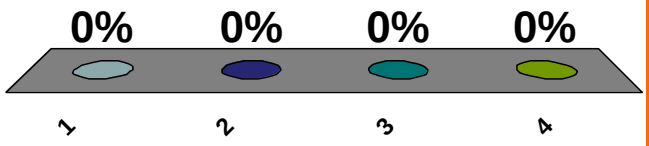
$$y' = ??$$

(a) $-e^y/(xe^y + 1)$

(b) $e^y/(xe^y + 1)$

(c) $(1 - e^y)/(xe^y + 1)$

(d) none of the above



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$y' = -e^y/(xe^y + 1)$

$xe^y + y = 1$

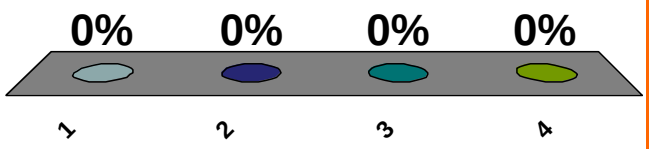
slope at $(0, 1)$?

(a) 0

(b) -1

(c) $-e$

(d) none of the above



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Topic 0430

10 pts

$$h'(x) = [f'(x)][g(x)] + [f(x)][g'(x)]$$

$$h'(4) = [f'(4)][g(4)] + [f(4)][g'(4)]$$

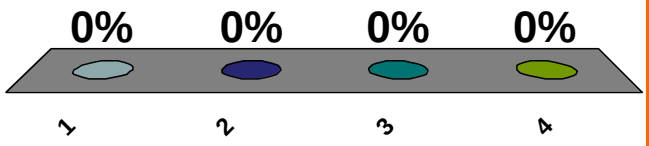
$$f(4) = 7,\ f'(4) = 1$$
$$g(4) = 6,\ g'(4) = 3$$
$$h(x) = [f(x)][g(x)]$$
$$h(4) = ??,\ h'(4) = ??$$

(a) 42, 3

(b) 13, 27

(c) 42, 27

(d) none of the above



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$$h'(x) = [g'(f(x))][f'(x)]$$
$$h'(4) = [g'(f(4))][f'(4)]$$

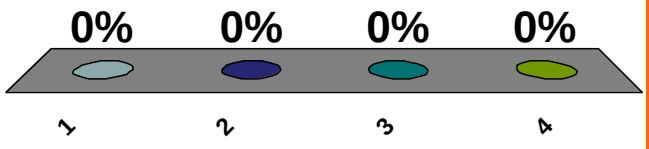
$$f(4) = 7,\ f'(4) = 1$$
$$g(7) = 6,\ g'(7) = 3$$
$$h(x) = g(f(x))$$
$$h(4) = ??,\ h'(4) = ??$$

(a) 6, 3

(b) 6, 27

(c) 42, 27

(d) none of the above



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$$f(g(x)) = x$$
$$[f'(g(x))][g'(x)] = 1$$
$$[f'(g(7))][g'(7)] = 1$$

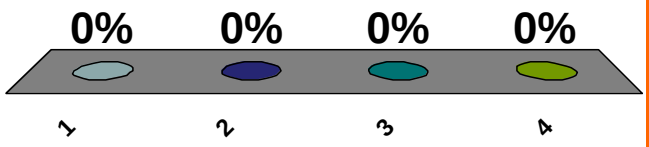
$$g = f^{-1}$$
$$f(4) = 7,\ g(7) = 4$$
$$f'(4) = 2,\ g'(7) = ??$$

(a) 1/2

(b) 4

(c) not enough information

(d) none of the above



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$$g = f^{-1}$$

$$f(6) = 9,\ f'(6) = 1/4$$

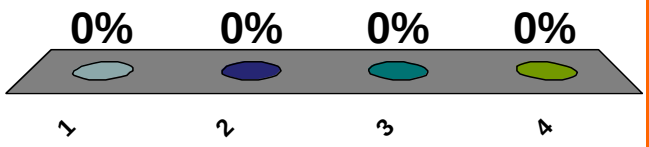
$$g'(9) = ??$$

(a) 1/2

(b) 4

(c) not enough information

(d) none of the above



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$$g = f^{-1}$$

$$f(6) = 9,\ f'(6) = 1/4$$

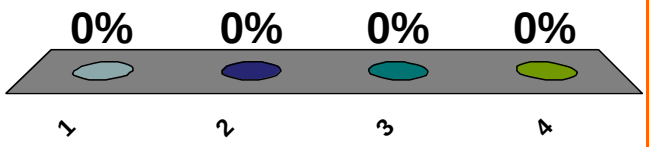
$$g'(6) = ??$$

(a) 1/2

(b) 4

(c) not enough information

(d) none of the above



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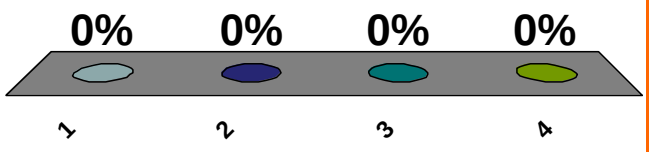
$$\lim_{x\to 0}\frac{e^x-1-x}{x^2}\underset{\text{l'H}}{=}\lim_{x\to 0}\frac{e^x-1}{2x}\underset{\text{l'H}}{=}\lim_{x\to 0}\frac{e^x}{2}$$

(a) ∞

(b) $\frac{1}{2}$

(c) DNE

(d) none of the above



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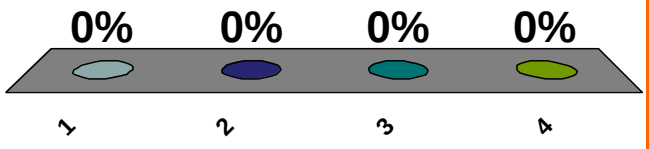
$$\lim_{x\to 0}\left[\frac{e^{2x}-1}{\ln(1+x)}\right] \overset{\text{l'H}}{=} \lim_{x\to 0}[??]$$

(a) $\dfrac{[\ln(1+x)][2e^{2x}]-[e^{2x}-1][1/(1+x)]}{[\ln(1+x)]^2}$

(b) $\dfrac{2e^{2x}}{1/(1+x)}$

(c) l'Hôpital does not apply.

(d) none of the above



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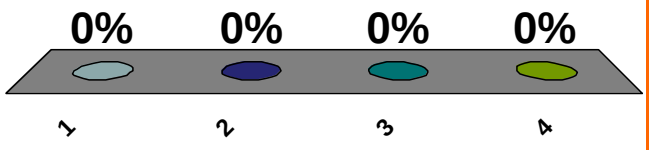
$$\lim_{x \to 0} \frac{e^x - x}{x^4}$$

(a) ∞

(b) $\lim_{x \to 0} \frac{e^x - 1}{4x^3}$

(c) DNE

(d) none of the above



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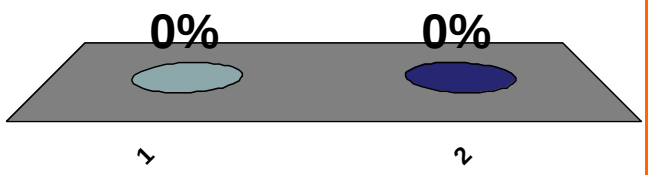
T or F:

$f' > 0$ on $(2, 3)$

$\Rightarrow$ f incr. on $(2, 3)$

(a) True

(b) False



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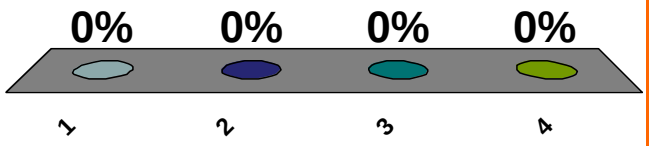
$$\frac{d}{dx}\left[e^{-2}\right] = ??$$

(a) 0

(b) $-2e^{-2}$

(c) $-e^{-2}$

(d) none of the above



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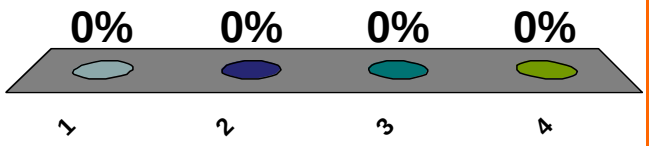
$$\frac{d}{dx}\left[(\ln 5)x\right] = ??$$

(a) 0

(b) $\ln 5$

(c) $x/5$

(d) none of the above



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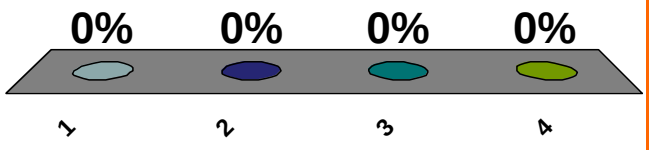
$(d/dx)(\ln|x|)$

(a) $1/x,\ x > 0$

(b) $|1/x|$

(c) $1/x$

(d) none of the above



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$$(d/dx)(\arctan x) = \frac{1}{1+x^2}$$

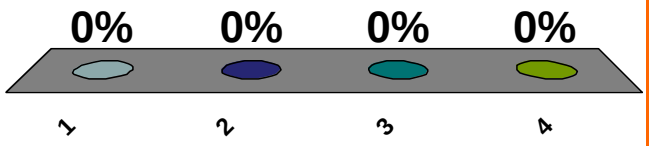
$$(d/dx)(\arctan e^x) = \text{??}$$

(a) $\dfrac{e^x}{1+(e^x)^2}$

(b) $(\operatorname{arcsec}^2 e^x)(e^x)$

(c) $\dfrac{1}{1+(e^x)^2}$

(d) none of the above



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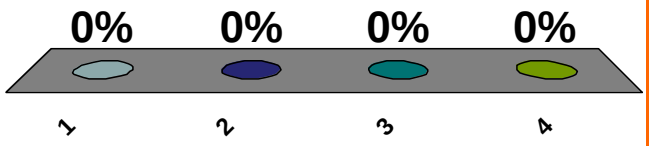
$(d/dx)(e^{-2x})$

(a) e^{-2x}

(b) e^{-2}

(c) $-2e^{-2x}$

(d) none of the above



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LOOK AHEAD

$$\int 3x^2 + (\cos x) + \frac{7}{x} - \frac{\pi}{\sqrt{x}}\,dx$$

$$\int \cos(3x + 7)\,dx$$

LOOK BACK

$$f(x) \underset{x \to a}{\to} \quad \Rightarrow \quad \ln(1 + [f(x)]) \underset{x \to a}{\sim} f(x)$$

$$\lim_{x \to 0} \left(1 - x^3 + x^4\right)^{\csc^3 x}$$

$$\lim_{x \to \infty} \left(\sqrt{x^2 + x} - \sqrt{x^2 - 7x}\right)$$

derivs w.r.t. x of exprs of y

CURRENT (implicit diff. & IFT)

derivs of arcsin, arccos
derivs of arctan, arccot

$\sin(xy) = 4x^2 - 7xy + y^2 e^x$

Slope of tan line to $x^4 + y^4 = 17$ at $(1, 2)$

Eq'n of tan line to $x^4 - 7xy + y^4 = 3$ at $(1, 2)$

$f(x) = x^7 + x$
$g = f^{-1}$
Find $g(2)$ and $g'(2)$.

$f(x) = 2x \quad \Rightarrow \quad f(s+t) = (f(s)) + (f(t))$??

$f(x) = 3x \quad \Rightarrow \quad f(s+t) = (f(s)) + (f(t))$??

$f(x) = 4x+1 \quad \Rightarrow \quad f(s+t) = (f(s))+(f(t))$??

limit of quotient $=$ quotient of limits ?

$$e^{\ln x} = x \quad ?$$

$$\ln e^{x} = x \quad ?$$

$$x^2/x = x \quad ?$$

$$x/x^2 = 1/x \quad ?$$

position $= 2t^3 + 5t^2$

velocity at $t = 3$?

LOOK AHEAD

$$y = (2x^2 - x + 1)(\cos(3x))$$

$\triangle y$, dy,

eq'n of tangent line at $(0, 1)$,

linearization at $x = 0$

SAVE THE SESSION DATA

RETURN TO PRESENTATION