

Classroom Voting Questions: Calculus I

3.6 The Chain Rule and Inverse Functions

1. $\ln(e^{3t})$ is

- (a) $\ln(e^3) + \ln(e^t)$
- (b) $3 \ln(e^t)$
- (c) $3 \ln(e^{3t})$
- (d) $te^{\ln 3}$
- (e) $3t$
- (f) None of the above

Answer: (e).

by Kelly Cline

SVC.03.06.005

2. $\frac{d}{dt} \ln(t^2 + 1)$ is

- (a) $2t \ln(t^2 + 1)$
- (b) $\frac{2t}{t^2+1}$
- (c) $\frac{dt}{\ln(t^2+1)}$
- (d) $\frac{1}{t^2+1}$

Answer: (b).

by Carroll College MathQuest

SVC.03.06.010

CC KC MA131 F05: 0/**84**/0/16

CC HZ MA131 F06: 10/**80**/0/10

CC KC MA121 F06: 4/**80**/0/16

CC HZ MA131 F07: 0/**88**/0/12 time 0:20

CC KC MA121 F07: 0/**0**/50/50 time 2:00

CC HZ MA131 F09: 4/**93**/0/0 time 1:00

CC HZ MA121 F09: 6/**76**/6/12

CC HZ MA131 F10: 0/**100**/0/0

CC KC MA121D F11: 14/**57**/0/29 "Individual, pre-discussion vote"

CC KC MA121D F11: 0/**100**/0/0 Post small-group discussion vote

AS DH MA2513 010 S12: 0/**65**/5/30 time 2:00

CC HZ MA131 F11: 5/**95**/0/0 time 2:00
CC HZ MA121 F12: 0/**94**/0/6 time 3:30
CC HZ MA131 F12: 5/**86**/0/10
CC KC MA131 F14: 0/**91**/0/9 time 1:15
CC KC MA131 S15: 0/**89**/0/11 time 2:00
CC KC MA131 F15: 0/**56**/0/44 time 1:25
CC KC MA131 S16: 0/**67**/0/33
CC KC MA131 F16: 0/**94**/6/0
CC KC MA131 S17: 6/**94**/0/0

3. $\frac{d}{dx} \ln(1 - x)$ is

- (a) $-\ln(1 - x)$
- (b) $-2x(1 - x^2)^{-1}$
- (c) $-(1 - x)$
- (d) $-(1 - x)^{-1}$

Answer: (d).

by Carroll College MathQuest

SVC.03.06.020

CC HZ MA131 F05: 0/0/10/**90**
CC HZ MA131 F06: 0/0/0/**100**
CC KC MA121 F06: 0/0/8/**92**
CC HZ MA131 F07: 6/0/0/**94** time 0:30
CC HZ MA131 F09: 4/0/7/**89** time 0:45
CC HZ MA121 F09: 0/0/12/**88**
CC HZ MA131 F10: 0/0/0/**100** time 0:30
CC KC MA121A F11: 0/0/5/**95** time 3:00
CC HZ MA131 F11: 0/0/0/**100** time 1:30
CC HZ MA121 F12: 0/0/5/**95** time 2:30
CC HZ MA131 F12: 0/0/5/**95**
CC KC MA131 F14: 0/0/0/**100** time :45
CC KC MA131 S15: 3/3/0/**94** time 1:45
CC KC MA131 F15: 0/0/0/**100**
CC KC MA131 S16: 0/4/7/**89**
CC KC MA131 F16: 0/0/0/**100** time 1:00
CC KC MA131 S17: 0/0/0/**100**

4. $\frac{d}{dx} \ln(\pi)$ is

- (a) $\frac{1}{\pi}$

- (b) $\frac{\ln(\pi)}{\pi}$
- (c) e^π
- (d) 0

Answer: (d).

by Carroll College MathQuest

SVC.03.06.030

CC HZ MA131 F05: 40/0/0/**60**
 CC KC MA131 F05: 16/0/0/**84**
 CC HZ MA131 F06: 15/5/0/**80**
 CC KC MA121 F06: 8/0/0/**92**
 CC HZ MA131 F07: 35/0/0/**65** time 0:15
 CC KC MA121 F07: 17/0/0/**83** time 1:30
 CC HZ MA131 F09: 7/0/4/**89** time 0:25
 CC HZ MA121 F09: 12/0/0/**88**
 CC HZ MA131 F10: 8/0/0/**92** time 0:30
 CC KC MA121A F11: 18/0/0/**82** time 1:00
 CC KC MA121D F11: 57/7/7/**29** "Individual, pre-discussion vote"
 CC KC MA121D F11: 14/0/0/**86** Post small-group discussion vote
 CC HZ MA131 F11: 15/0/0/**85** time 1:00
 CC HZ MA121 F12: 18/0/0/**82** time 1:00
 CC HZ MA131 F12: 10/0/0/**90** time 0:45
 CC KC MA131 F14: 5/0/0/**95** time :55
 CC KC MA131 S15: 15/0/0/**85** time 1:00
 CC KC MA131 F15: 0/0/0/**100** time 1:10
 CC KC MA131 S16: 26/4/0/**70** time 1:15
 CC KC MA131 F16: 0/0/0/**100**
 CC KC MA131 S17: 0/0/0/**100**

5. $\frac{d}{d\theta} \ln(\cos \theta)$ is

- (a) $\frac{\sin \theta}{\cos \theta}$
- (b) $-\sin \theta \ln(\cos \theta)$
- (c) $-\frac{\sin \theta}{\cos \theta}$
- (d) $-\frac{\sin \theta}{\ln(\cos \theta)}$

Answer: (c).

by Carroll College MathQuest

SVC.03.06.040

CC HZ MA131 F05: 10/10/**80**/0
 CC HZ MA131 F06: 5/0/**95**/0
 CC KC MA121 F06: 7/0/**93**/0
 CC HZ MA131 F07: 6/0/**94**/0 time 0:20
 CC HZ MA131 F09: 15/0/**85**/0 time 0:30
 CC HZ MA121 F09: 13/0/**81**/6
 CC HZ MA131 F10: 0/0/**100**/0 time 0:30
 CC KC MA121A F11: 0/0/**100**/0 time 2:00
 CC KC MA121D F11: 14/14/**58**/14 "Individual, pre-discussion vote"
 CC KC MA121D F11: 0/7/**93**/0 Post small-group discussion vote
 CC HZ MA131 F11: 5/0/**95**/0 time 1:00
 CC HZ MA121 F12: 0/0/**100**/0 time 2:00
 CC HZ MA131 F12: 5/0/**95**/0 time 0:30
 CC KC MA131 F14: 14/0/**86**/0 time 1:00
 CC KC MA131 S15: 0/4/**96**/0 time 1:30
 CC KC MA131 F15: 0/0/**100**/0 time 1:15
 CC KC MA131 S16: 4/7/**89**/0 time 1:00
 CC KC MA131 F16: 0/0/**100**/0 time 1:00
 CC KC MA131 S17: 0/6/**94**/0

6. Find $f'(x)$ if $f(x) = \log_5(2x + 1)$.

(a) $f'(x) = \frac{2}{\ln 5} \cdot \frac{1}{2x + 1}$

(b) $f'(x) = \frac{2 \ln 5}{2x + 1}$

(c) $f'(x) = \frac{2}{\log_5(2x + 1)}$

(d) $f'(x) = \frac{2}{2x + 1}$

Answer: (a).

by Briggs and Cochran, Calculus, Early Transcendentals, Addison Wesley and David A. Huckaby

SVC.03.06.045

AS DH 2513 010 S12: **89**/5/5/0 time 2:00

7. If $g(x) = \sin^{-1} x$, then $g'(x)$ is

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

(b) $\frac{1}{\cos x}$

- (c) $-\frac{\cos x}{\sin^2 x}$
 (d) $\csc x \cot x$

Answer: (a).

by Carroll College MathQuest

SVC.03.06.050

CC HZ MA131 F05: **100**/0/0/0
 CC KC MA131 F05: **100**/0/0/0
 CC KC MA121 F06: **20**/28/52/0 (did not teach the rule first)
 CC HZ MA131 F09: **100**/0/0/0 time 0:10
 CC HZ MA121 F09: **88**/0/12/0
 AS DH MA2513 010 S12: **84**/11/5/0 time 1:00
 CC HZ MA131 F11: **100**/0/0/0 time 1:00
 CC HZ MA131 F12: **95**/5/0/0 time 0:30
 CC KC MA131 F14: **73**/0/27/0 time 1:45
 CC KC MA131 S15: **36**/8/56/0 time 3:30
 CC KC MA131 S17: **12**/35/53/0

8. If $g(x) = (\sin x)^{-1}$, then $g'(x)$ is

- (a) $\frac{1}{\sqrt{1-x^2}}$
 (b) $\frac{1}{\cos x}$
 (c) $-\frac{\cos x}{\sin^2 x}$
 (d) $\csc x \cot x$

Answer: (c). point out difference in notation between this problem and previous problem

by Carroll College MathQuest

SVC.03.06.060

CC HZ MA131 F05: 0/60/**40**/0
 CC KC MA131 F05: 48/12/**40**/0
 CC HZ MA131 F06: 10/20/**70**/0
 CC KC MA121 F06: 12/0/**88**/0
 CC HZ MA131 F07: 35/12/**53**/0 time 0:45
 CC KC MA121 F07: 42/4/**54**/0 time 4:00
 CC HZ MA131 F09: 4/19/**78**/0 time 0:50
 CC HZ MA121 F09: 0/19/**81**/0
 CC HZ MA131 F10: 4/29/**67**/0 time 1:00
 CC KC MA121A F11: 27/18/**50**/0 time 3:30
 CC KC MA121D F11: 36/36/**21**/7 "Individual, pre-discussion vote"

CC KC MA121D F11: 0/43/**57**/0 Post small-group discussion vote
AS DH MA2513 010 S12: 45/5/**45**/5 time 1:40
CC HZ MA131 F11: 0/5/**95**/0 time 2:15
CC HZ MA131 F12: 5/19/**76**/0 time 1:00
CC KC MA131 F14: 5/14/**58**/23 time 2:00

9. If $p(x) = 3 \ln(2x + 7)$, then $p'(2)$ is

- (a) $\frac{6}{11}$
- (b) $\frac{6}{2x+7}$
- (c) $\frac{3}{2}$
- (d) $\frac{3}{x}$
- (e) $\frac{3}{11}$

Answer: (a).

by Carroll College MathQuest

SVC.03.06.070

CC KC MA121 F07: **92**/4/4/0/0 time 4:00
CC HZ MA131 F09: **70**/22/0/0/7 time 0:50
CC HZ MA121 F09: **88**/6/0/6/0
CC KC MA121A F11: **95**/0/0/5/0 time 3:00
CC KC MA121D F11: **46**/36/7/0/14 "Individual, pre-discussion vote"
CC KC MA121D F11: **100**/0/0/0/0 Post small-group discussion vote
CC KC MA131 F14: **90**/5/0/5/0 time 1:35
CC KC MA131 S15: **90**/3/0/0/7 time 2:00
CC KC MA131 F15: **94**/0/0/0/6 time 1:40
CC KC MA131 S16: **88**/4/0/4/4 time 1:45
CC KC MA131 F16: **88**/6/0/0/6

10. If $q = a^2 \ln(a^3 c \sin b + b^2 c)$, then $\frac{dq}{db}$ is

- (a) $\frac{a^2}{a^3 c \sin b + b^2 c}$
- (b) $\frac{a^5 c \cos b + 2a^2 bc}{a^3 c \sin b + b^2 c}$
- (c) $\frac{a^3 c \cos b + 2bc}{a^3 c \sin b + b^2 c}$
- (d) $\frac{6a^3 \cos b + 4ab}{a^3 c \sin b + b^2 c}$

Answer: (b).

by Carroll College MathQuest

SVC.03.06.080

CC KC MA121 F07: 0/**77**/18/5 time 5:00

CC HZ MA131 F09: 0/**81**/15/4 time 2:30

CC KC MA131 F14: 0/**62**/24/14 time 4:30

CC KC MA131 S15: 4/**88**/0/8 time 3:15

CC KC MA131 F15: 6/**94**/0/0 time 4:00

CC KC MA131 S16: 4/**81**/11/4 time 4:00

CC KC MA131 F16: 0/**100**/0/0

CC KC MA131 S17: 6/**70**/18/6