

Pre-AP Pre-Cal

Power Rule

Name _____

Date _____

1. If $f(x) = 5x^3$, then $f'(2) =$
- a) 30 b) 10 c) 40 d) 60 e) $15x^2$
2. If $f(x) = 2x^4$, then $f'(3) =$
- a) 27 b) 54 c) 108 d) 216 e) 162
3. Given the position function $s = t^2 + 9t - 5$, what is the instantaneous rate of change at $t = 3$?
- a) $2t + 9$ b) $2t$ c) 6 d) 15 e) 10
4. Given the position function $s = t^3 + 5t - 1$, what is the instantaneous rate of change at $t = 2$?
- a) $3t^2 + 5$ b) $3t^2$ c) 12 d) 17 e) 16
5. Given the position function $F(x) = x^2 - 8x + 11$, what is the instantaneous rate of change of F ?
- a) $2x - 8$ b) $2x$ c) $x^2 - 8$ d) $2x + 3$ e) 2
6. Given the position function $F(x) = x^3 + 5x^2 - 3$, what is the instantaneous rate of change of F ?
- a) $3x^2 + 10x - 3$ b) $3x^2$ c) $x^2 + 10$ d) $x^2 + 10x$ e) $3x^2 + 10x$
7. A projectile starts at time $t = 0$ and moves along the x -axis so that its position at any time $t \geq 0$ is $x(t) = t^3 - 6t^2 + 9t + 12$. What is the velocity of the particle at $t = 0$.
- a) -9 b) 0 c) 6 d) 9 e) 12
8. The position of a particle at any time t is given by $s = t^3 - \frac{9}{2}t^2 - 12t + 4$. What is the velocity after 5 seconds?
- a) 21 b) 84 c) 18 d) -6 e) -84

9. The velocity of a speck of dirt moving in a straight line at any time t is $v(t) = 2 - 14t + 12t^2$. What is the acceleration of the particle at $t = 4$?
- a) 6 b) 24 c) 48 d) 4 e) 82
10. A particle's motion is described by $x(t) = 4t^3 - 5t^2$, $t \geq 0$, where t is in seconds and distance in meters. Find the average velocity in the third second.
- a) 19 m/s b) 38 m/s c) 48 m/s d) 51 m/s e) 78 m/s
11. $\lim_{h \rightarrow 0} \frac{\frac{1}{x+h} - \frac{1}{x}}{h} =$
- a) $\frac{1}{x^2}$ b) $-x^2$ c) $-\frac{1}{x^2}$ d) x^2 e) $-\frac{1}{x}$
12. $\lim_{h \rightarrow 0} \frac{7(x+h)^2 - 7x^2}{h} =$
- a) $14xh$ b) 7 c) $14x$ d) $7x$ e) 14
13. What is $\lim_{h \rightarrow 0} \frac{(x+h)^2 - x^2}{h}$?
- a) $2xh$ b) $2x$ c) $2h$ d) h e) 0
14. What is $\lim_{h \rightarrow 0} \frac{(4+h)^3 - 4^3}{h}$?
- a) $8h$ b) 16 c) 48 d) 64 e) 8
15. What is $\lim_{h \rightarrow 0} \frac{\sqrt[3]{8+h} - \sqrt[3]{8}}{h}$?
- a) $\frac{1}{12}$ b) $\frac{1}{4}$ c) $\frac{1}{64}$ d) $\frac{1}{8}$ e) 0

Acces format version 3.60B
© 1997–2003 EducAide Software
Licensed for use by Richardson High School

Pre-AP Pre-Cal Power Rule Seaman 4/5/2013

Answer List

- | | | |
|-------|-------|-------|
| 1. d | 2. d | 3. d |
| 4. d | 5. a | 6. e |
| 7. d | 8. c | 9. e |
| 10. d | 11. c | 12. c |
| 13. b | 14. c | 15. a |

Catalog List

- | | | |
|---------------|---------------|---------------|
| 1. APC EB 1 | 2. APC EB 2 | 3. APC DI 15 |
| 4. APC DI 17 | 5. APC DI 19 | 6. APC DI 21 |
| 7. APC EI 17 | 8. APC EI 19 | 9. APC EI 39 |
| 10. APC EI 21 | 11. APC CB 13 | 12. APC CB 2 |
| 13. APC DA 1 | 14. APC DA 15 | 15. APC DA 20 |