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AP Calc AB: 2.3A

2. $f(x) = \pi^2$

$f'(x) = 0$

4. $g(x) = \frac{7}{4}x^2 - 3x + 12$

$g'(x) = \frac{7}{2}x - 3$

6. $f(t) = 1.4t^5 - 2.5t^2 + 6.7$

$f'(t) = 7t^4 - 5t$

8. $H(v) = (3v-1)(v+2)$

$= 3v^2 + 5v - 2$

$H'(v) = 6v + 5$

10. $B(y) = cy^{-6}$

$B'(y) = -6cy^{-7}$

12. $y = x^{5/3} - x^{2/3}$

$y' = \frac{5}{3}x^{2/3} - \frac{2}{3}x^{-1/3}$

14. $y = \sqrt[3]{x}(2+x)$

$= 2x^{1/3} + x \cdot x^{1/3}$

$= 2x^{1/3} + x^{4/3}$

$y' = \frac{2}{3}x^{-2/3} + \frac{4}{3}x^{1/3}$

16. $S(R) = 4\pi R^2$

$S'(R) = 8\pi R$

18. $y = \frac{\sqrt{x} + x}{x^2}$

$= \frac{\sqrt{x}}{x^2} + \frac{x}{x^2}$

$= x^{-3/2} + x^{-1}$

$y' = -\frac{3}{2}x^{-5/2} - x^{-2}$

20. $G(t) = \sqrt{5t} + \frac{\sqrt{7}}{t}$

$= t^{1/2}\sqrt{5} + t^{-1}\sqrt{7}$

$G'(t) = \frac{\sqrt{5}}{2}t^{-1/2} - \frac{\sqrt{7}}{t^2}$

22. $D(t) = \frac{1+16t^2}{(4t)^3}$

$= \frac{1+16t^2}{64t^3}$

$= \frac{1}{64t^3} + \frac{16t^2}{64t^3}$

$= \frac{1}{64}t^{-3} + \frac{1}{4}t^{-1}$

$D'(t) = -\frac{3}{64}t^{-4} - \frac{1}{4}t^{-2}$

78. $f(x) = x^3 + 3x^2 + x + 3$

$f'(x) = 3x^2 + 6x + 1$

$0 = 3x^2 + 6x + 1$

$\frac{-6 \pm \sqrt{36 - 4(3)}}{2(3)}$

$= \frac{-6 \pm 2\sqrt{6}}{6}$

$= \frac{-3 \pm \sqrt{6}}{3}$

80. $y = x^4 + 1$

$y' = 4x^3$

$4x^3 = 32$

$x^3 = 8$

$x = 2$

$y - 17 = 32(x-2)$

$32x - y = 15$

$y = 32x - 15$