

1. a. -1 b. 2 c. 2 d. DNE e. -4 f. 4 g. ∞ h. 2 i. 3 j. DNE

2. a. $-\frac{3}{8}$ b. $-\frac{14}{27}$

3. a. $-\frac{9}{10}$ b. $\tan^{-1}(-\sqrt{3}) = -\frac{\pi}{3}$

4. a. $y = -\frac{3}{2}, x = 0$ b. $y = 3, y = -3, x = 4$

5. $\mathbf{a} = \frac{3}{2}, \mathbf{b} = \frac{7}{2}$

6. $f'(x) = \lim_{h \rightarrow 0} \frac{\frac{3(x+h)}{(x+h)-5} - \frac{3x}{x-5}}{h} = \dots = \frac{-15}{(x-5)^2}$

7. a. $32x^3 - 5e^x + \frac{3}{2}\sqrt{x} - \frac{24}{x^5}$

b. $\left[\frac{1}{2}x^{-1/2} - 2x^{4/3}\right](x^4 - 5e^x + 4) + (x^{1/2} + 6x^{-1/3})[4x^3 - 5e^x]$

c. $\frac{[-\sin x](1+\sin x) - \cos x[\cos x]}{(1+\sin x)^2} = \dots = \frac{-1}{1+\sin x}$