

1.	If $f(x) = x^3 + 3x$, approximate $f(2.01)$ using linearization.
2.	For the function f , $f' = 2x + 1$ and $f(1) = 4$. What is the approximation for $f(1.2)$ using the tangent line approximation?
3.	Approximate $\sqrt{24.9} + (24.9)^2$ using linearization.
4.	Find an approximate value for $f(-3.9)$ on $f(x) = \sqrt{x^2 + 9}$ using linearization.
5.	Approximate using tangent line approximation: $\sqrt[4]{17}$
6.	Approximate using a tangent line approximation $(8.4)^{4/3}$.
7.	Let f be the function given by $f(x) = \frac{2x - 5}{x^2 - 4}$. a. Find the domain of f . b. Write an equation for each vertical and each horizontal asymptote for the graph of f . c. Find $f'(x)$ and simplify. d. Write an equation for the line tangent to f at the point $(0, f(0))$. e. Evaluate $\lim_{x \rightarrow 2^+} f(x)$. ("DNE" is not an acceptable answer for this one.)
8.	If $f(x) = \frac{1}{x^2 + 1}$ and $g(x) = \sqrt{x}$, then the derivative of $f(g(x))$ is ... A) $-\frac{\sqrt{x}}{(x^2 + 1)^2}$ B) $-(x + 1)^{-2}$ C) $-\frac{2x}{(x^2 + 1)^2}$ D) $\frac{1}{(x + 1)^2}$ E) $\frac{1}{2\sqrt{x}(x + 1)}$
9.	$\lim_{x \rightarrow 2} \frac{\sqrt{x^2 - 2} - \sqrt{-x + 4}}{x - 2} =$

Answers:

1. 14.15	2. 4.6	3. 624.99
4. 4.92	5. 2.031	6. $\frac{256}{15}$
7. a. all reals except 2 and -2 b. $x = 2$; $x = -2$ $y = 0$ c. $f'(x) = \frac{2x^2 + 10x - 8}{(x^2 - 4)^2}$ d. $y - \frac{5}{4} = -\frac{1}{2}(x - 0)$ e. $-\infty$	8. B	9. $\frac{5}{2\sqrt{2}}$