

Finding the equation of a tangent line

1. $f(x) = 4 - x^2$ when $x = -1$
2. $f(x) = 8x^3$ when $x = 1$
3. $f(x) = 2x^3 + 4x$ when $x = 4$
4. $f(x) = x + x^{-1}$ when $x = 4$
5. $f(x) = \frac{1}{x^2}$ when $x = -1$
6. $f(x) = x^4$ when $x = 2$
7. $f(x) = \sqrt[3]{x}$ when $x = 8$
8. $f(x) = \left(\frac{1}{x} - x^2\right)(x^3 + 1)$ at $x = 1$
9. $y = \sin x + 3\cos x$ at $x = 0$
10. $y = \csc x - \cot x$ at $x = \frac{\pi}{4}$
11. $y = \frac{\sin \theta - \cos \theta}{\theta}$ at $\theta = \frac{\pi}{4}$
12. At what point is the tangent $f(x) = 3 - 4x - x^2$ horizontal

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