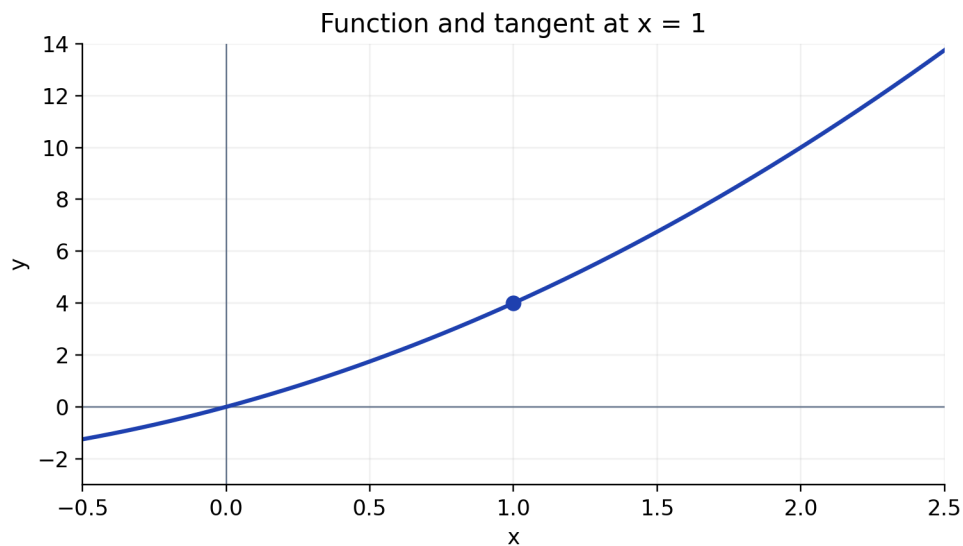


Lesson 2.1 · Practice

No calculator required | Name: _____

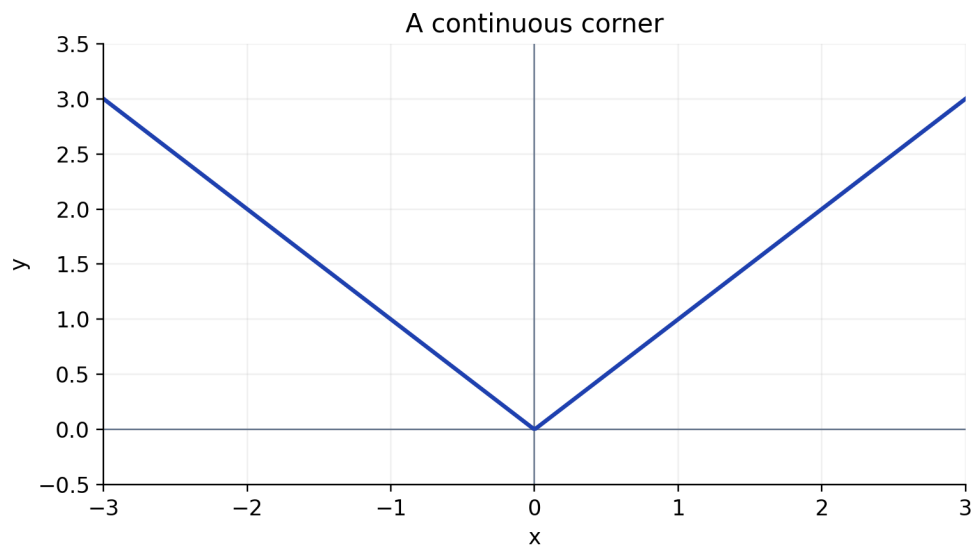
1. Use the limit definition to find $f'(1)$ for $f(x) = x^2 + 3x$. Write its tangent line.



Use the difference quotient to find the tangent slope.

Lesson 2.1 · Practice

No calculator required | Name: _____

2. Is $f(x) = |x|$ differentiable at 0? Use one-sided slopes.

Compare the slope on each side of the origin.

3. Express $\lim_{h \rightarrow 0} \frac{(3+h)^2 - 9}{h}$ as a derivative and evaluate it.

Lesson 2.2 · Practice

No calculator required | Name: _____

4. Differentiate $f(x) = 4x^3 - 5x^2 + 7$.

5. Differentiate $g(x) = e^x + \ln x - 2\cos x$ and state the domain.

6. For $s(t) = t^3 - 6t^2 + 9t$, find velocity and acceleration at $t = 2$.

Lesson 2.3 · Practice

No calculator required | Name: _____

7. Differentiate $f(x) = (2x^2 + 1)^3$.

8. Differentiate $g(x) = x^2 e^{2x}$.

9. Find $h'(2)$ for $h(x) = \frac{x^2}{x+1}$.

Lesson 2.4 • Practice

No calculator required | Name: _____

10. For $xy + y^2 = 6$, find y' at $(1, 2)$.

11. If $f(3) = 7$ and $f'(3) = 4$, find $(f^{-1})'(7)$.

12. Differentiate $h(x) = \arctan(2x)$.
