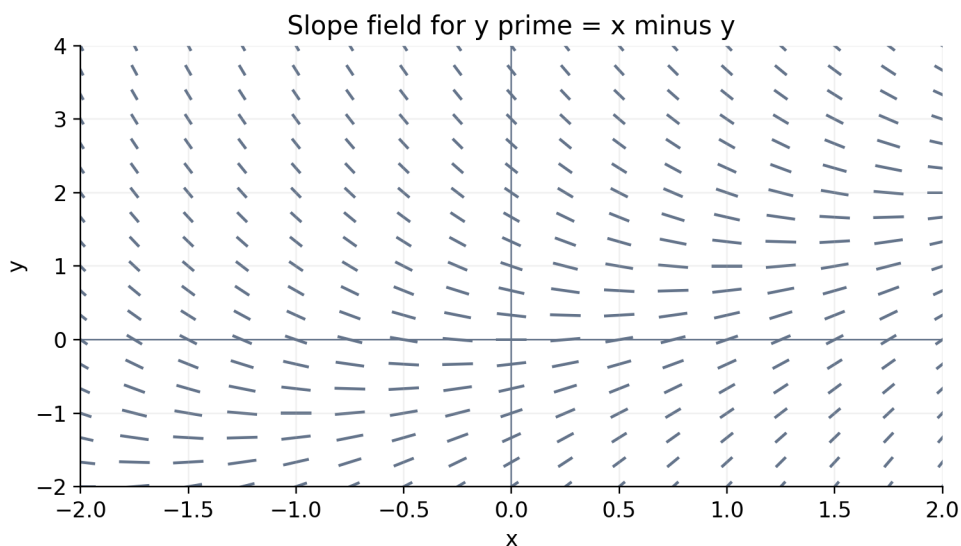


Lesson 6.1 · Practice

No calculator required | Name: _____

1. For $y' = x - y$, identify zero, positive, and negative slopes.



Compare segment directions above and below the diagonal.

2. **BC extension.** Use two Euler steps of $h = 1/2$ for $y' = x + y$, $y(0) = 1$, to estimate $y(1)$.

Lesson 6.1 · Practice

No calculator required | Name: _____

3. Verify $y = 2e^{-x}$ as a solution of $y' = -y$, $y(0) = 2$.

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Lesson 6.2 · Practice

No calculator required | Name: _____

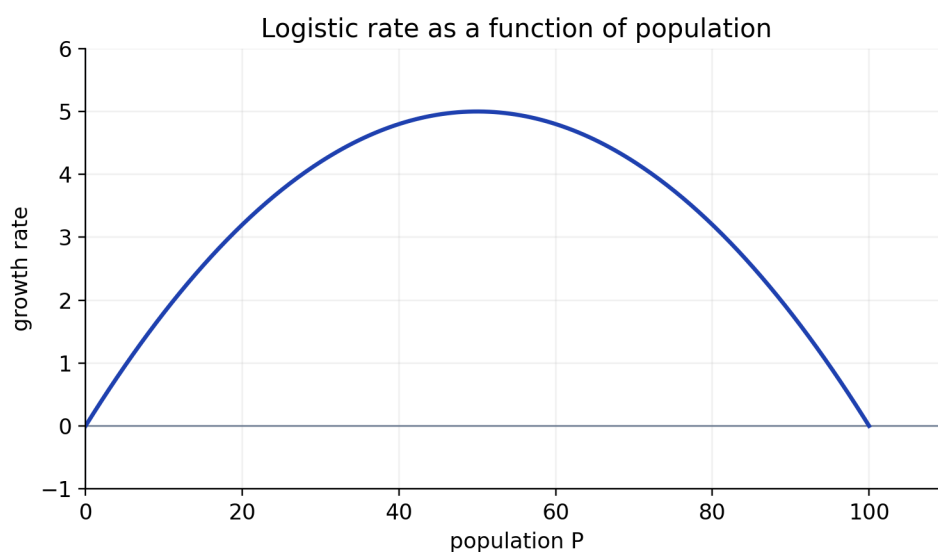
4. Solve $y' = 3x^2y$ with $y(0) = 2$.

5. An amount starts at 80 and has half-life 4 years. Find its amount at 8 years.

Lesson 6.2 · Practice

No calculator required | Name: _____

6. BC extension. For $P' = 0.2P(1 - P/100)$, identify equilibria, carrying capacity, and the amount at fastest growth.



The horizontal axis is population, not time.

Lesson 6.3 · Practice

BC extension · Optional for AP Calculus AB

7. Find $\int x \cos x \, dx$.

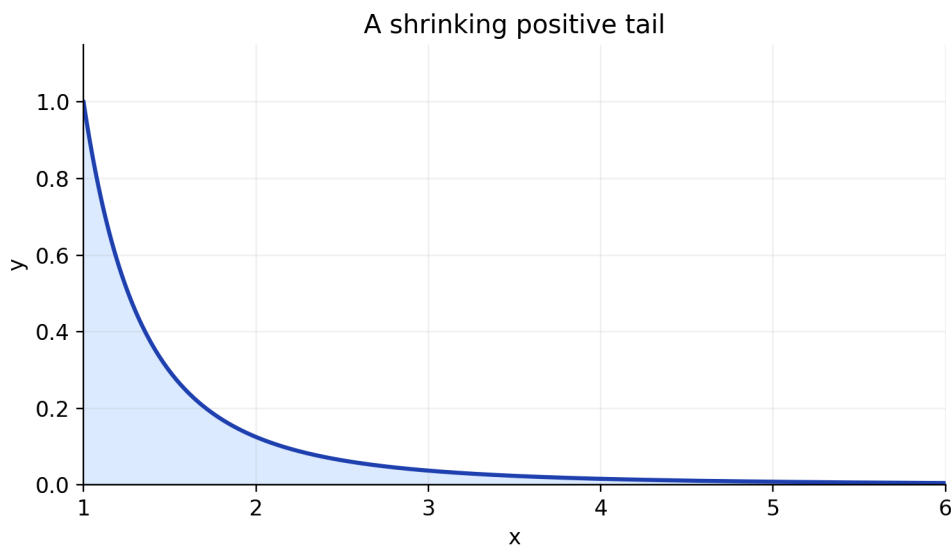
8. Find $\int \ln x \, dx$ for $x > 0$.

9. Find $\int \frac{1}{x(x+1)} \, dx$ on intervals excluding -1 and 0 .

Lesson 6.4 · Practice

BC extension · Optional for AP Calculus AB

10. Evaluate $\int_1^{\infty} x^{-3} dx$ using a limit.



The graph continues beyond the plotted window; evaluate a limit to test its area.

11. Determine whether $\int_0^1 x^{-1/2} dx$ converges and find its value if it does.

Lesson 6.4 · Practice

BC extension · Optional for AP Calculus AB

12. Does $\int_{-1}^1 (1/x) dx$ equal zero?

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