Chapter 9 Section 1

MA1032 Data, Functions & Graphs

Sidney Butler

Michigan Technological University

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Scenario

The area A is proportional to the square of its radius, r.

$$y = kx^p$$

Example

1. $y = \sqrt{3x}$
2. $y = \frac{\pi}{x}$
3. $y = x^3 - x^2$
4. $y = \frac{-x}{\sqrt{x}}$

Six basic types of power functions

$k = 1, p = 2$
$k = 1, p = 3$
$k = 1, p = -2$
$k = 1, p = -3$
$k = 1, p = \frac{1}{2}$
$k = 1, p = \frac{1}{3}$

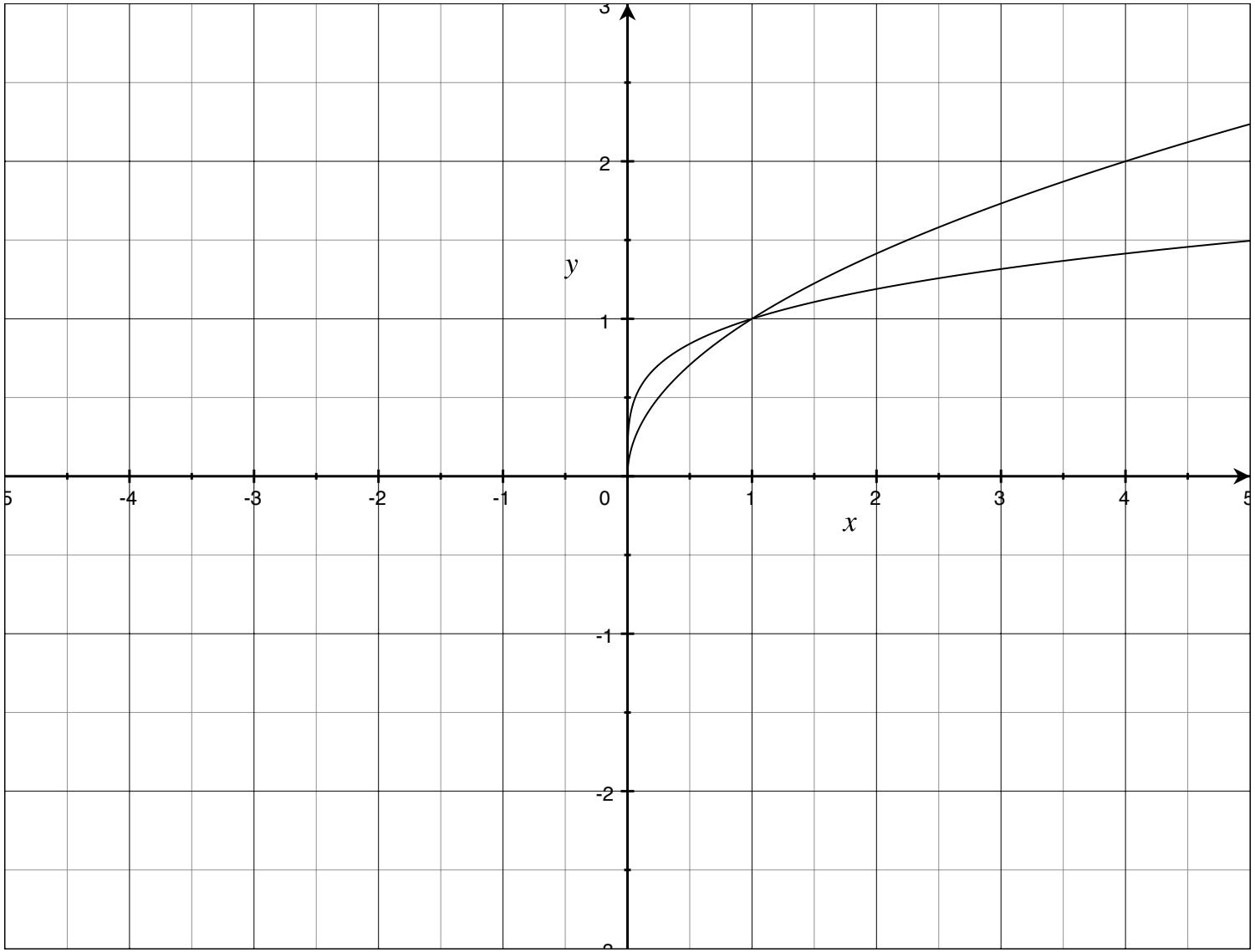
End behavior
General Shape
Concavity
x-intercepts
Vertical Asymptotes
Horizontal Asymptotes

Resemblance?

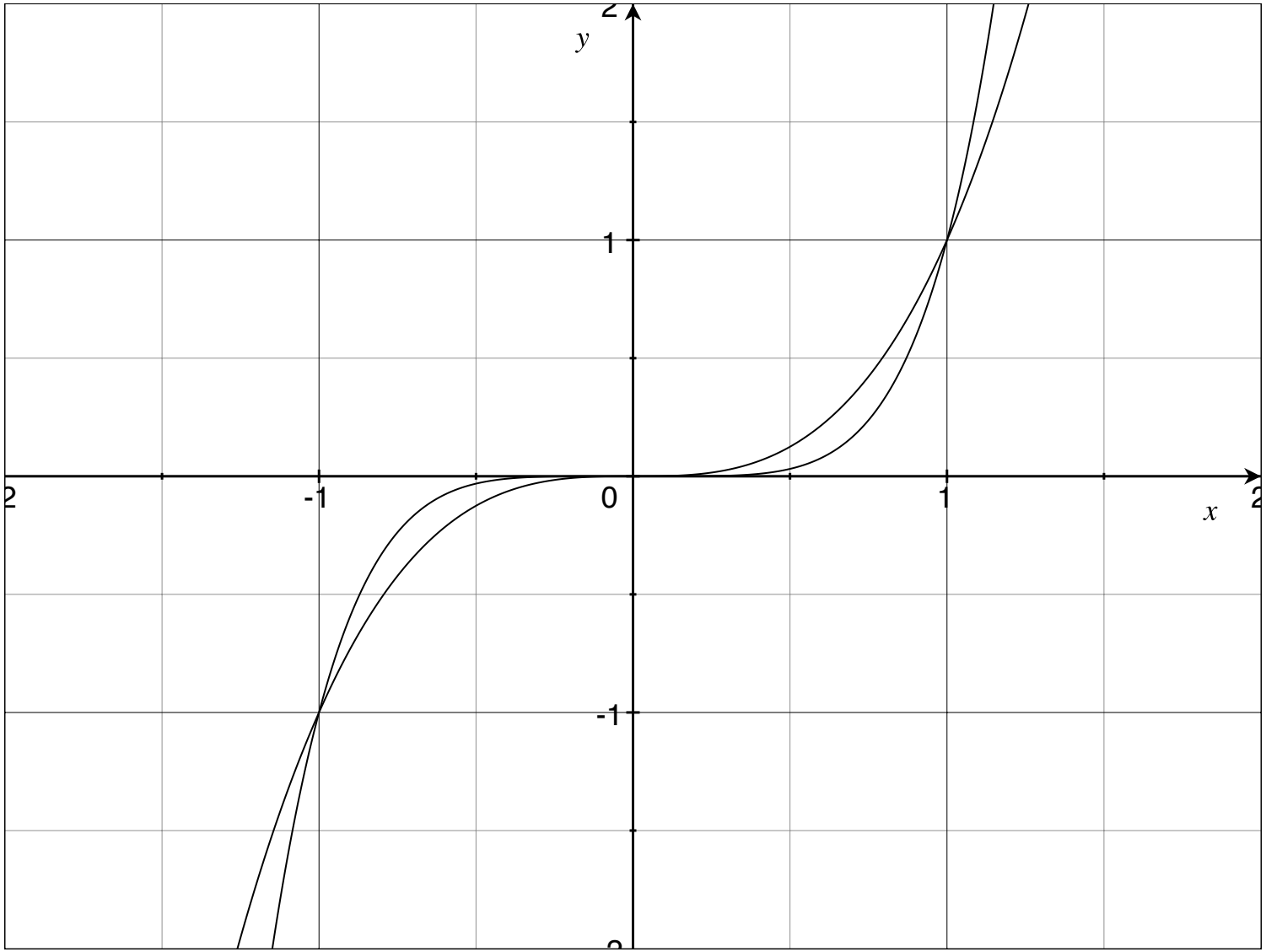
$$y = 0.25x^{-5}$$

$$y = 3x^{\frac{1}{4}}$$

$y = x^{\frac{1}{2}}$ and $y = x^{\frac{1}{4}}$



$y = x^3$ and $y = x^5$



Summary

- Proportionality & power functions
- General form of a power function
- Classification of power functions