



# Differentiating Bases Other Than e

$$\frac{dy}{dx} [a^x] = a^x \ln a$$

$$\frac{dy}{dx} [\log_a x] = \frac{1}{x \ln a}$$

- 1
- 2
- 3
- 4
- 5
- 6
- 7





# Differentiating Bases Other Than e

Find  $y'$  if  $y = 5^x$

- 1
- 2
- 3
- 4
- 5
- 6
- 7





# Differentiating Bases Other Than e

Find  $f'(x)$  if  $f(x) = 2\log_7 x$

- 1
- 2
- 3
- 4
- 5
- 6
- 7





# Differentiating Bases Other Than e

Find  $f'(x)$  if  $f(x) = x^2(2^{3x-1})$

- 1
- 2
- 3
- 4
- 5
- 6
- 7





# Differentiating Bases Other Than e

Find the rate at which  $f(x)$  is changing at  $x = 3$  if  $f(x) = 3x^3 + \log_4(\cos x)$

- 1
- 2
- 3
- 4
- 5
- 6
- 7





# Differentiating Bases Other Than e

Find the tangent line of  $f(x)$  at  $\left(\frac{\pi}{2}, \frac{4}{\pi^2}\right)$  if  $f(x) = \log_2\left(\frac{\sin x}{x^2}\right)$

- 1
- 2
- 3
- 4
- 5
- 6
- 7





# Differentiating Bases Other Than e

Compare the difference in deriving  $2^2$ ,  $x^2$ ,  $2^x$ , and  $x^x$

- 1
- 2
- 3
- 4
- 5
- 6
- 7





# Differentiating Bases Other Than e

Find the derivative of  $y = (x + 3)^{2x}$

- 1
- 2
- 3
- 4
- 5
- 6
- 7







# Integrating Bases Other Than e

$$\int a^x dx = \frac{a^x}{\ln a} + c$$



- 1
- 2
- 3



# Integrating Bases Other Than e

$$\int 8^x dx$$



- 1
- 2
- 3



**Integrating Bases Other Than e**

Find  $\int_{-1}^3 2x^2(3^{x^3-1}) dx$

- 1
- 2
- 3





## Integrating Bases Other Than e

Find the average value of  $f(x) = \frac{5^x}{1-5^x}$  on  $[1, 2]$

- 1
- 2
- 3



**Homework:**

**p. 366# 37-55 odd, 61-71 odd**