

Practice Problems

for the Calculus I/Precalculus Placement Test - Fall, 2005 - Part 8

1. Which of functions are exponential functions.

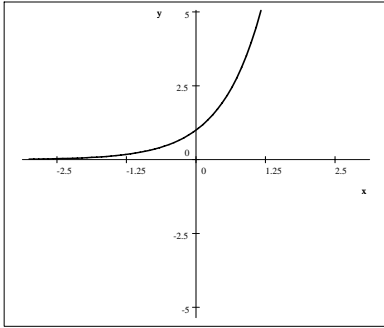
(1) $f(x) = x^4$ (2) $f(x) = (\pi)^x$ (3) $f(x) = \left(\frac{1}{e}\right)^x$ (4) $f(x) = 2^\pi$ (5) $f(x) = x^x$

2. Let $f(x) = 3^x$ and $g(x) = \left(\frac{1}{3}\right)^x$. Evaluate and simplify if possible the following.

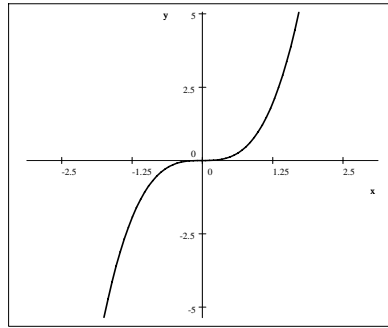
(1) $f(-2) + g(0)$ (2) $f(1)g(-2)$ (3) $\frac{f(-2)}{g(2)}$ (4) $(g \circ f)(0)$

3. The graphs of exponential functions are given. Match each graph to one of the function.

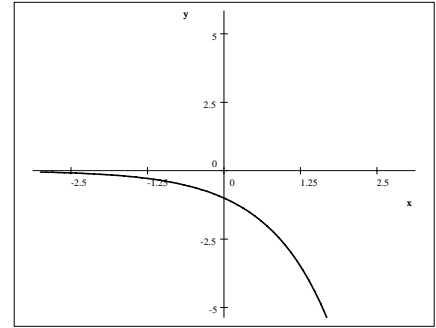
(1) $f(x) = -\left(\frac{1}{4}\right)^x$ (2) $f(x) = 4^x$ (3) $f(x) = -e^x$ (4) $f(x) = \left(\frac{1}{e}\right)^x$



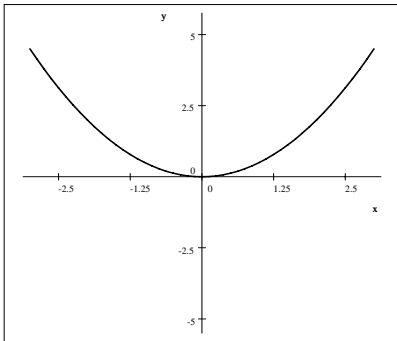
(i)



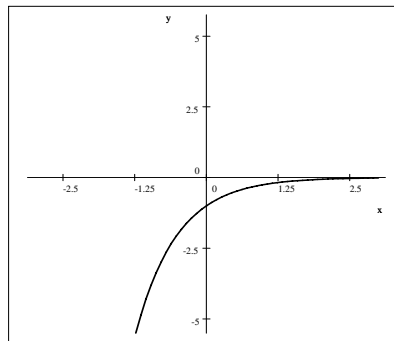
(ii)



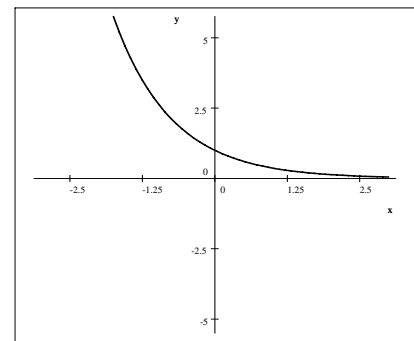
(iii)



(iv)



(v)



(vi)

4. Solve each equation.

a. $3^{x+2} = 9$

b. $5^{1-2x} = \frac{1}{5}$

c. $2^{x^2-2x} = 8$

d. $(e^4)^x (e^{x^2}) = e^{12}$

5. Convert each angle in radians to degrees.

(1) $\theta = \frac{\pi}{4}$ radians (2) $\theta = 3$ radians (3) $\theta = -\frac{5\pi}{6}$ radians (4) $\theta = \frac{11\pi}{6}$ radians

6. Convert each angle in degrees to radians.

(1) $\theta = 120^\circ$ (2) $\theta = -225^\circ$ (3) $\theta = 330^\circ$ (4) $\theta = 100^\circ$

7. Find the length of arc s if the radius r of the circle and the central angle θ are given below.

a. $r = 2$ inches, $\theta = 30^\circ$

b. $r = 3$ meters, $\theta = 120^\circ$

c. $r = 1$ foot, $\theta = 360^\circ$