

Worksheet 10 KEY – Logarithmic Functions (§5.3)

1.

(a) $5^4 = 625$

(c) $2^{-5} = \frac{1}{32}$

(e) $\left(\frac{1}{2}\right)^{-3} = 8$

(b) $7^2 = 49$

(d) $10^3 = 1000$

(f) $C^E = D$

2.

(a) $\log_2(64) = 6$

(c) $\log(10,000) = 4$

(e) $\ln(1) = 0$

(b) $\log_{1/4}(16) = -2$

(d) $\log_3\left(\frac{1}{9}\right) = -2$

(f) $\log_F(H) = G$

3.

(a) $\log_{\boxed{9}}\left(\frac{1}{\boxed{81}}\right) = -2$

(c) $\log_{\boxed{1/3}}\left(\frac{1}{\boxed{9}}\right) = 2$

(e) $\log\left(\frac{1}{\boxed{10000}}\right) = -4$

(b) $\log_5(\boxed{125}) = 3$

(d) $\log_8(\boxed{1}) = 0$

(f) $\ln(\boxed{e}) = 1$

4.

(a) 2

(c) $\frac{1}{2}$

(e) 2

(b) -3

(d) -3

(f) $\frac{1}{2}$

5. Good luck.

6.

(a) $(-\infty, 3)$

(d) (4,7)

(b) $(-4, \infty)$

(e) \mathbb{R}

(c) $(-\infty, -2) \cup (2, \infty)$

(f) $[1, \infty)$

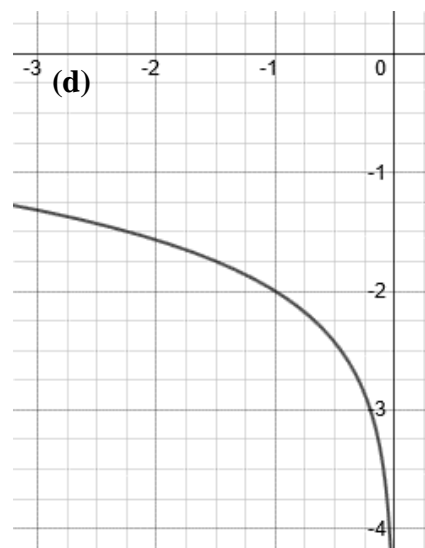
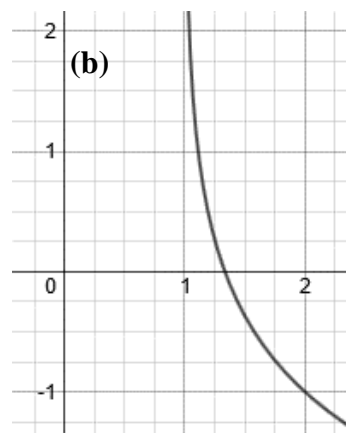
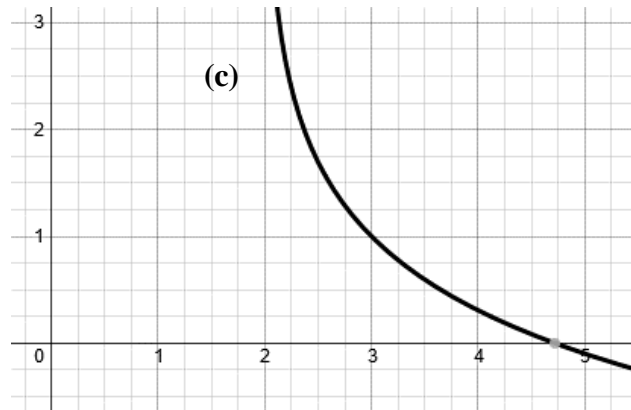
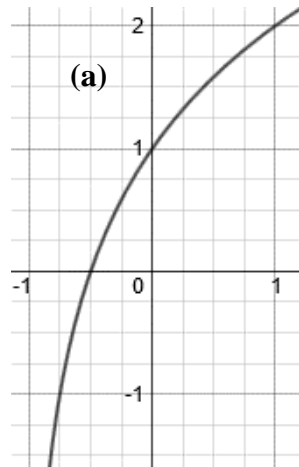
7. (Graphs on the next page)

(a) $(-1, \infty), \mathbb{R}, x = -1$

(c) $(2, \infty), \mathbb{R}, x = 2$

(b) $(1, \infty), \mathbb{R}, x = 1$

(d) $(-\infty, 0), \mathbb{R}, x = 0$



8.

(a) $f^{-1}(x) = \log_6(2x) + 3$

(b) $f^{-1}(x) = 2^{x-4} + 1$

(c) $f^{-1}(x) = \frac{1}{2} \ln(x + 3) + \frac{1}{2}$

(d) $f^{-1}(x) = 3^{-x-3} - 2$