

## U5 Test Study Guide

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**Simplify. Your answer should contain only positive exponents.**

1)  $4^{-3} \cdot 4^{-1}$

2)  $3v^0 \cdot v^0$

3)  $b^2b^4$

4)  $4nn^4$

5)  $(3^3)^{-2}$

6)  $(2k^4)^3$

7)  $(4a^{-2})^{-3}$

8)  $n^{-1}$

9)  $\frac{2u^{-5}v^6}{3v^6}$

10)  $\frac{2x^4y^{-4}z^{-1}}{4x^{-4}}$

11)  $\frac{3x^4y^3z^4}{4x^0y^2z^3}$

12)  $\frac{2p^0q^{-4}r^3}{4qp^0r^{-3}}$

**Find the inverse of each function.**

13)  $f(x) = 2(x - 3)^5$

14)  $f(n) = \sqrt[3]{n} + 1$

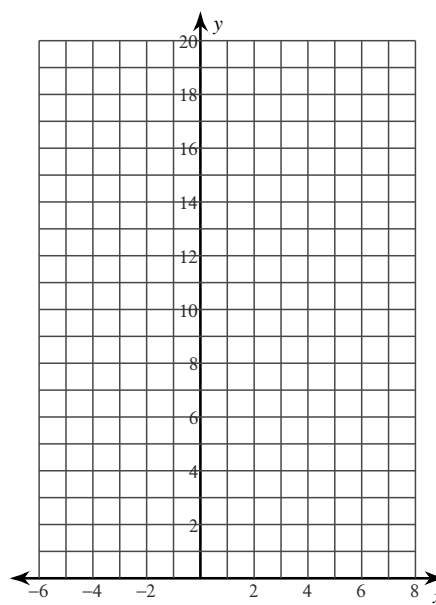
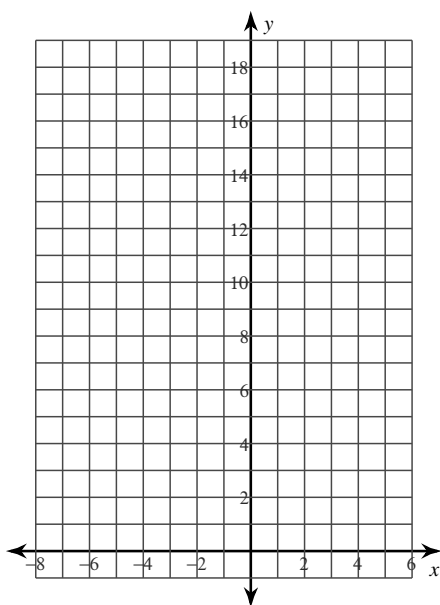
15)  $g(n) = \sqrt[5]{n - 3}$

16)  $f(x) = \sqrt[5]{\frac{-x - 2}{2}}$

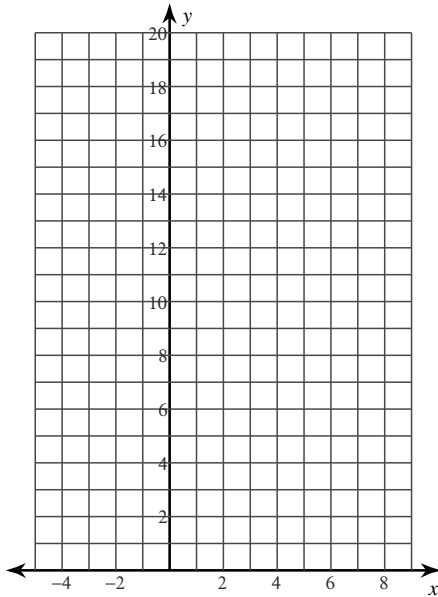
**Sketch the graph of each function.**

17)  $f(x) = \left(\frac{1}{4}\right)^{x+1} - 1$

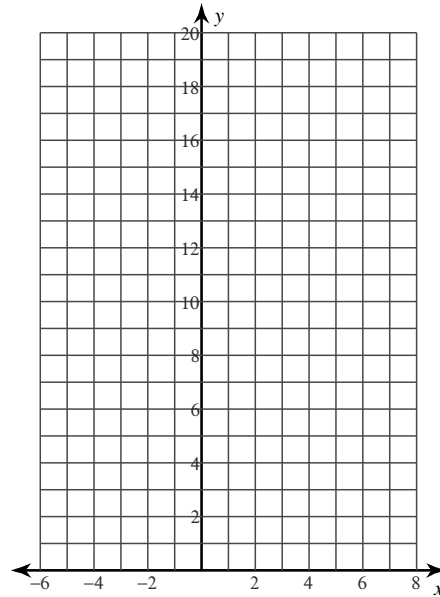
18)  $f(x) = \left(\frac{1}{4}\right)^{x-1} + 2$



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



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



**Perform the indicated operation.**

21)  $g(a) = -a$   
 $f(a) = a^3 - 4 + a$   
 Find  $g(f(a))$

22)  $g(n) = n + 3$   
 $h(n) = n - 2$   
 Find  $g(h(n))$

23)  $f(x) = 3x - 4$   
 $g(x) = 2x + 5$   
 Find  $f(g(x))$

24)  $g(t) = -3t$   
 $h(t) = 2t^2 - 3t$   
 Find  $g(h(t))$

**Solve each equation.**

25)  $4^{-3k} = \frac{1}{4}$

26)  $5^{-2p} = 25$

27)  $\left(\frac{1}{6}\right)^{2x} = 36$

28)  $125^{3n} = 625^{2n-2}$

29)  $216 \cdot 6^{-3m} = 216$

30)  $5^{3r-1} \cdot 5^{-2r+3} = 5^3$

31)  $9^{2-2x} \cdot 9^x = 9^{x+1}$

32)  $36^{2n} \cdot 36^{-2n} = 216$

33) Graph the piecewise function  $f(x) = x + 3$  for  $x \leq 2$  and  $f(x) = x^3$  for  $x > 2$

34) Graph the piecewise function  $f(x) = 2x - 2$  for  $x \leq -1$  and  $f(x) = x^2$  for  $x > -1$

# Answers to U5 Test Study Guide (ID: 1)

1)  $\frac{1}{4^4}$

2) 3

3)  $b^6$

4)  $4n^5$

5)  $\frac{1}{3^6}$

6)  $8k^{12}$

7)  $\frac{a^6}{64}$

8)  $\frac{1}{n}$

9)  $\frac{2}{3u^5}$

10)  $\frac{x^8}{2y^4z}$

11)  $\frac{3x^4yz}{4}$

12)  $\frac{r^6}{2q^5}$

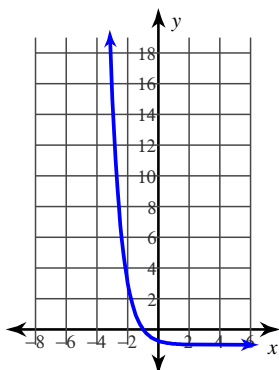
13)  $f^{-1}(x) = \frac{6 + \sqrt[5]{16x}}{2}$

14)  $f^{-1}(n) = (n - 1)^3$

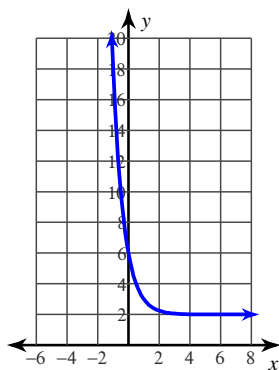
15)  $g^{-1}(n) = 3 + n^5$

16)  $f^{-1}(x) = -2 - 2x^5$

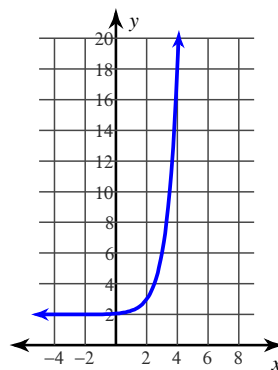
17)



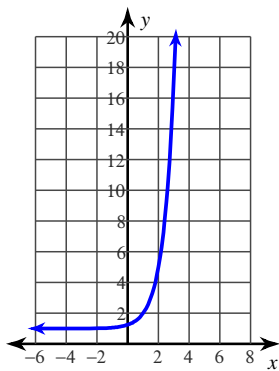
18)



19)



20)



21)  $-a^3 - a + 4$

22)  $n + 1$

23)  $6x + 11$

24)  $-6t^2 + 9t$

25)  $\left\{ \frac{1}{3} \right\}$

26)  $\{-1\}$

27)  $\{-1\}$

28)  $\{-8\}$

29)  $\{0\}$

30)  $\{1\}$

31)  $\left\{ \frac{1}{2} \right\}$

32) No solution.

33) The dot next to the choice indicates that it is the answer.

34) The dot next to the choice indicates that it is the answer.