

Indices Solutions

1. Solutions:

(a) $3^4 \times 3^3 = 3^7$

(b) $2^3 \times 2^5 = 2^8$

(c) $5^4 \times 5 = 5^5$

(d) $6^4 \times 6^{-2} = 6^2$

(e) $\frac{2^8}{2^4} = 2^4$

(f) $\frac{5^7}{5^3} = 5^4$

(g) $\frac{3^2}{3^5} = 3^{-3}$

(h) $\frac{2^4}{2} = 2^3$

(i) $\frac{3}{3^4} = 3^{-3}$

(j) $(3^3)^2 = 3^6$

(k) $(2^5)^3 = 2^{15}$

(l) $(5^3)^6 = 5^{18}$

(m) $(6^4)^{-3} = 6^{-12}$

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

(o) $\frac{1}{5^3} = 5^{-3}$

(p) $\frac{1}{3^4} = 3^{-4}$

(q) $\frac{1}{4} = 4^{-1}$

(r) $\sqrt{2} = 2^{\frac{1}{2}}$

(s) $\sqrt{5} = 5^{\frac{1}{2}}$

(t) $(\sqrt{3})^3 = 3^{\frac{3}{2}}$

(u) $(\sqrt{5})^4 = 5^2$

(v) $\frac{2^3}{\sqrt{2}} = 2^{\frac{5}{2}}$

$$(w) \frac{1}{\sqrt{3}} = 3^{-\frac{1}{2}}$$

$$(x) 5^3 \times \sqrt{5} = 5^{\frac{7}{2}}$$

$$(y) \frac{\sqrt{7}}{7^2} = 7^{-\frac{3}{2}}$$

$$(z) (\sqrt{2})^3 \times 2^5 = 2^{\frac{13}{2}}$$

Express each of the following in the form a^n where a is a prime number

2. 2^3

3. 3^2

4. 5^2

5. 3^3

6. 2^4

7. 3^4

8. 5^3

9. 2^7

10. 3^{-2}

11. 2^{-3}

12. 3^{-3}

13. $2^{\frac{3}{2}}$

14. $3^{\frac{3}{2}}$

15. $2^{\frac{5}{2}}$

16. $5^{\frac{3}{2}}$

Exponential equations.

1. $x = 2$

2. $x = 3$

3. $x = 3$

4. $x = 3$

5. $x = 3$

6. $x = 4$

7. $x = 1$

8. $x = \frac{5}{2}$
9. $x = \frac{3}{2}$
10. $x = \frac{5}{2}$
11. $x = \frac{3}{2}$
12. $x = \frac{8}{3}$
13. $x = \frac{13}{6}$
14. $x = -3$
15. $x = -5$
16. $x = -\frac{3}{2}$
17. $x = \frac{1}{2}$
18. $x = \frac{1}{2}$
19. $x = -\frac{1}{2}$
20. $x = \frac{1}{4}$
21. $x = -\frac{1}{2}$