

Answers Sheet

Fractional and Negative Indices

1. Flip / Reciprocal
 $= 1 / 4$

2.
 $= 7 / 2$

3.
 $= 1 / 8$

4.
 $= 1 / 2$

5. Square Root
 $= 9$

6.
 $= 5$

7.
 $= 11$

8.
 $= 8$

9. Flip and Square Root
 $= 1 / 7$

10. Cube Root
 $= 2$

11.
 $= 3$

12.
 $= 5$

13.
 $= 6$

14. Flip and Cube Root
 $= 1 / 6$

15.
 $= (2)^{-2}$
 $= 4^{-1}$
 $= 1 / 4$

16.
 $= (4)^2$
 $= 16$

17.
 $= (3)^{-2}$
 $= 9^{-1}$
 $= 1 / 9$

18.

$$\begin{aligned} &= (6)^{-2} \\ &= 36^{-1} \\ &= 1 / 36 \end{aligned}$$

19.

$$\begin{aligned} &= (3x^2)^2 \\ &= 9 x^4 \end{aligned}$$

20.

$$\begin{aligned} &= (2 / 3)^{-2} \\ &= (4 / 9)^{-1} \\ &= 9 / 4 \end{aligned}$$

21.

$$\begin{aligned} &= (3 / 8)^{-3} \\ &= (27 / 512)^{-1} \\ &= 512 / 27 \end{aligned}$$

22.

$$\begin{aligned} &= (5 / 6)^{-2} \\ &= (25 / 36)^{-1} \\ &= 36 / 25 \end{aligned}$$

23.

$$\begin{aligned} &= (9 / 7)^{-3} \\ &= (729 / 343)^{-1} \\ &= 343 / 729 \end{aligned}$$

24.

$$\begin{aligned} &= \sqrt[4]{(81 \times 10^8)} \\ &= 3 \times 10^2 \\ &= 300 \end{aligned}$$

25.

$$\begin{aligned} &= \sqrt[3]{(125 \times 10^{12})} \\ &= 5 \times 10^4 \\ &= 50,000 \end{aligned}$$

26.

$$\begin{aligned} 5^1 \times 5^{1/2} &= 5^n \\ 5^{3/2} &= 5^n \\ &= 3/2 \end{aligned}$$

27.

$$\begin{aligned} 7^1 \times 7^{3/2} &= 7^n \\ 7^1 \times 7^{3/2} &= 7^n \\ 7^{5/2} &= 7^n \\ &= 5/2 \end{aligned}$$

28.

- i) $p \times q$
 - ii) $p / 2$
 - iii) p^2
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29.

$$\begin{aligned} 4^{-n} &= 1 / 2 \\ 4^n &= 2 \\ (4^n)^2 &= 4 \end{aligned}$$

30.

$$\begin{aligned} 3^{-n} &= 1 / 2 \\ (3^n) &= 2 \\ (3^n)^3 &= 8 \end{aligned}$$

31.

$$4^n = 32$$

$$(2^2)^n = 32$$

$$2^{2n} = 2^5$$

$$2n = 5$$

$$n = 5/2$$

32.

$$25^{-n} = 125$$

$$5^{-2n} = 5^3$$

$$-2n = 3$$

$$n = -1.5$$
