Exact values of trigonometric functions in radians worksheet – Grade 12

Grade 12 · Mixed level · 20 questions · **Version X8651**

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1. Find the exact value of $\sin\left(\frac{11\pi}{6}\right)$.

   A. $\frac{\sqrt{3}}{2}$ **B.** 0 **C.** $\frac{1}{2}$ **D.** $-\frac{1}{2}$

2. What is $\sin\left(\frac{7\pi}{6}\right)$ exactly?

   A. 0 **B.** $-\frac{\sqrt{3}}{2}$ **C.** $-\frac{1}{2}$ **D.** $\frac{1}{2}$

3. What is $\sin\left(\frac{7\pi}{4}\right)$ exactly?

   A. 1 **B.** $\frac{\sqrt{2}}{2}$ **C.** 0 **D.** $-\frac{\sqrt{2}}{2}$

4. Find the exact value of $\tan\left(\frac{\pi}{3}\right)$.

   A. 0 **B.** $\frac{1}{\sqrt{3}}$ **C.** $\sqrt{3}$ **D.** $-\sqrt{3}$

5. Work out the exact value of $\sin\left(\frac{\pi}{2}\right)$.

   A. -1 **B.** 1 **C.** $\frac{\sqrt{3}}{2}$ **D.** 0

6. What is the exact value of $\cos\left(\frac{2\pi}{3}\right)$?

   A. $\frac{\sqrt{3}}{2}$ **B.** $\frac{1}{2}$ **C.** 0 **D.** $-\frac{1}{2}$

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7. What is the exact value of $\cos\left(\frac{3\pi}{2}\right)$?

   A. -1 **B.** $\frac{\sqrt{3}}{2}$ **C.** 0 **D.** 1

8. Work out the exact value of $\csc\left(\frac{11\pi}{6}\right)$.

   A. $\frac{2}{\sqrt{3}}$ **B.** 2 **C.** -2 **D.** 0

9. What is the exact value of $\sin\left(\frac{11\pi}{3}\right)$?

   A. $-\frac{\sqrt{3}}{2}$ **B.** $\frac{\sqrt{3}}{2}$ **C.** 0 **D.** $\frac{1}{2}$

10. Find the exact value of $\cos\left(\frac{7\pi}{3}\right)$.

    A. $\frac{\sqrt{3}}{2}$ **B.** $\frac{1}{2}$ **C.** 0 **D.** $-\frac{1}{2}$

11. Find the exact value of $\tan\left(-\frac{\pi}{2}\right)$.

    A. 0 **B.** 1 **C.** undefined **D.** -1

12. Work out the exact value of $\cos\left(\frac{35\pi}{6}\right)$.

    A. 0 **B.** $-\frac{1}{2}$ **C.** $-\frac{\sqrt{3}}{2}$ **D.** $\frac{\sqrt{3}}{2}$

13. What is the exact value of $\tan\left(-\frac{5\pi}{3}\right)$?

    A. $-\sqrt{3}$ **B.** 0 **C.** $\frac{1}{\sqrt{3}}$ **D.** $\sqrt{3}$

14. Without a calculator, is $\cos\left(\frac{7\pi}{4}\right)$ positive or negative?

    A. Positive **B.** Negative

15. Find the exact value of $2\sin^2\left(\frac{7\pi}{6}\right) + 3\sin\left(\frac{11\pi}{6}\right)$. (Write a fraction if needed, like 5/4.)

    Answer: _____

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16. Work out the exact value of $\sec\left(\frac{2\pi}{3}\right)$.

A. -2 **B.** 0 **C.** 2 **D.** $\frac{2}{\sqrt{3}}$

17. Which other angle in $0 \leq x < 2\pi$ has the same cosine as $\frac{\pi}{6}$?

A. $\frac{7\pi}{6}$ **B.** $\frac{2\pi}{3}$ **C.** $\frac{5\pi}{6}$ **D.** $\frac{11\pi}{6}$

18. Work out the exact value of $12\cos^2\left(\frac{\pi}{6}\right) + 2\sin(0)$. (Write a fraction if needed, like 5/4.)

Answer: _____

19. What is the exact value of $8\sin^2\left(\frac{5\pi}{6}\right) + 2\sin\left(\frac{11\pi}{6}\right)$? (Write a fraction if needed, like 5/4.)

Answer: _____

20. What is the exact value of $\csc\left(-\frac{11\pi}{4}\right)$?

A. undefined **B.** 0 **C.** $\sqrt{2}$ **D.** $-\sqrt{2}$

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Answer key · Version X8651

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1. **D (** $-\frac{1}{2}$ **)**
2. **C (** $-\frac{1}{2}$ **)**
3. **D (** $-\frac{\sqrt{2}}{2}$ **)**
4. **C (** $\sqrt{3}$ **)**
5. **B (1)**
6. **D (** $-\frac{1}{2}$ **)**
7. **C (0)**
8. **C (** -2 **)**
9. **A (** $-\frac{\sqrt{3}}{2}$ **)**
10. **B (** $\frac{1}{2}$ **)**
11. **C (** undefined **)**
12. **D (** $\frac{\sqrt{3}}{2}$ **)**
13. **D (** $\sqrt{3}$ **)**
14. **A (Positive)**
15. **-1**
16. **A (** -2 **)**
17. **D (** $\frac{11\pi}{6}$ **)**
18. **9**
19. **1**
20. **D (** $-\sqrt{2}$ **)**

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