

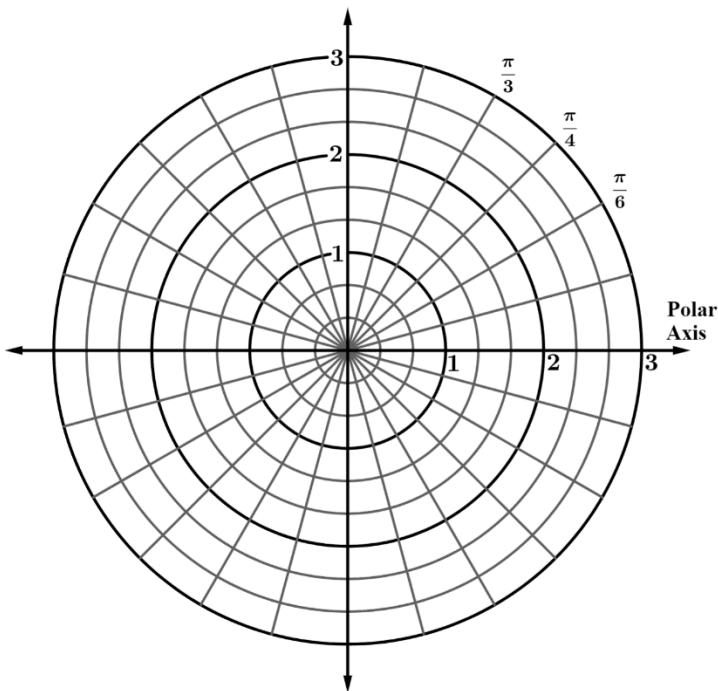
1. Plot (and label) the following polar coordinates on the polar coordinate grid above.

$$A\left(3, \frac{2\pi}{3}\right)$$

$$B\left(2, \frac{7\pi}{6}\right)$$

$$C\left(1.5, \frac{\pi}{4}\right)$$

$$D\left(1, \frac{\pi}{2}\right)$$



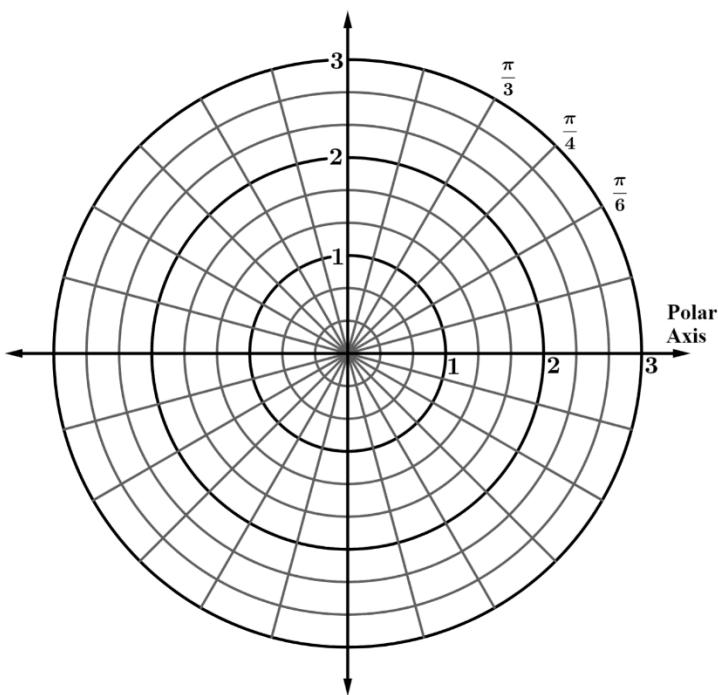
2. Plot (and label) the following polar coordinates on the polar coordinate grid above.

$$A\left(-3, \frac{5\pi}{6}\right)$$

$$B\left(-2, \pi\right)$$

$$C\left(-1, \frac{\pi}{3}\right)$$

$$D\left(-3, \frac{7\pi}{4}\right)$$



3. Plot (and label) the following polar coordinates on the polar coordinate grid above.

$$A\left(2, -\frac{\pi}{6}\right)$$

$$B\left(-3, -\frac{\pi}{2}\right)$$

$$C\left(-2, \frac{3\pi}{4}\right)$$

$$D\left(-2, -\frac{2\pi}{3}\right)$$

4. The location of a point in the plane is given by polar coordinates $\left(4, \frac{5\pi}{6}\right)$. Write two different representations for this point in polar coordinates.

5. The location of a point in the plane is given by polar coordinates $\left(-3, \frac{5\pi}{4}\right)$. Write two different representations for this point in polar coordinates.

6. The location of a point in the plane is given by polar coordinates $\left(2, \frac{3\pi}{2}\right)$. Write two different representations for this point in polar coordinates.

7. The location of a point in the plane is given by polar coordinates $\left(5, \frac{4\pi}{3}\right)$. Which of the following gives another representation for this point in polar coordinates?

- (A) $\left(-5, -\frac{4\pi}{3}\right)$ (B) $\left(-5, \frac{4\pi}{3}\right)$ (C) $\left(5, -\frac{2\pi}{3}\right)$ (D) $\left(5, -\frac{\pi}{3}\right)$

8. The location of a point in the plane is given by polar coordinates $\left(-2, \frac{\pi}{2}\right)$. Which of the following gives another representation for this point in polar coordinates?

- (A) $\left(-2, \frac{3\pi}{2}\right)$ (B) $\left(2, \frac{\pi}{2}\right)$ (C) $\left(2, -\frac{3\pi}{2}\right)$ (D) $\left(2, -\frac{\pi}{2}\right)$

9. The location of a point in the plane is given by polar coordinates $\left(-4, \frac{5\pi}{6}\right)$. Which of the following gives another representation for this point in polar coordinates?

- (A) $\left(4, \frac{5\pi}{6}\right)$ (B) $\left(4, \frac{7\pi}{6}\right)$ (C) $\left(4, \frac{11\pi}{6}\right)$ (D) $\left(-4, -\frac{5\pi}{6}\right)$

10. The location of point A in polar coordinates (r, θ) is $\left(2, \frac{5\pi}{3}\right)$. Which of the following describes the location of point A in rectangular coordinates (x, y) ?

- (A) $(1, \sqrt{3})$ (B) $(-1, \sqrt{3})$ (C) $(1, -\sqrt{3})$ (D) $(\sqrt{3}, -1)$

11. The location of point B in polar coordinates (r, θ) is $\left(1, \frac{2\pi}{3}\right)$. Which of the following describes the location of point B in rectangular coordinates (x, y) ?

- (A) $\left(-\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$ (B) $\left(\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$ (C) $\left(-\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$ (D) $\left(-\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$

12. The location of point X in polar coordinates (r, θ) is $\left(-4, \frac{\pi}{3}\right)$. Which of the following describes the location of point X in rectangular coordinates (x, y) ?
- (A) $(2, 2\sqrt{3})$ (B) $(2\sqrt{3}, 2)$ (C) $(-2, -2\sqrt{3})$ (D) $(2, -2\sqrt{3})$

13. The location of point D in polar coordinates (r, θ) is $\left(-1, -\frac{\pi}{6}\right)$. Which of the following describes the location of point D in rectangular coordinates (x, y) ?
- (A) $\left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$ (B) $\left(-\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$ (C) $\left(\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$ (D) $\left(-\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

14. The location of point X in rectangular coordinates (x, y) is $(3, 0)$. Which of the following describes the location of point X in polar coordinates (r, θ) ?
- (A) $\left(3, \frac{\pi}{2}\right)$ (B) $(3, \pi)$ (C) $(-3, \pi)$ (D) $(-3, 2\pi)$

15. The location of point A in rectangular coordinates (x, y) is $\left(-\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$. Which of the following describes the location of point A in polar coordinates (r, θ) ?

- (A) $\left(1, \frac{\pi}{3}\right)$ (B) $\left(1, \frac{5\pi}{6}\right)$ (C) $\left(1, \frac{2\pi}{3}\right)$ (D) $\left(1, \frac{4\pi}{3}\right)$

16. The location of point B in rectangular coordinates (x, y) is $(-\sqrt{2}, -\sqrt{2})$. Which of the following describes the location of point B in polar coordinates (r, θ) ?

- (A) $\left(2, \frac{5\pi}{4}\right)$ (B) $\left(2, \frac{7\pi}{4}\right)$ (C) $\left(-2, \frac{5\pi}{4}\right)$ (D) $\left(-2, \frac{7\pi}{4}\right)$

17. A complex number is represented by a point in the complex plane. The complex number has the rectangular coordinates $(2, -2)$. Which of the following is one way to express the complex number using its polar coordinates (r, θ) ?

- (A) $\left(2\sqrt{2} \cos\left(\frac{\pi}{4}\right)\right) + i\left(2\sqrt{2} \sin\left(\frac{\pi}{4}\right)\right)$
(B) $\left(2 \cos\left(\frac{\pi}{4}\right)\right) + i\left(2 \sin\left(\frac{\pi}{4}\right)\right)$
(C) $\left(2\sqrt{2} \cos\left(-\frac{\pi}{4}\right)\right) + i\left(2\sqrt{2} \sin\left(-\frac{\pi}{4}\right)\right)$
(D) $\left(2 \cos\left(-\frac{\pi}{4}\right)\right) + i\left(2 \sin\left(-\frac{\pi}{4}\right)\right)$

18. A complex number is represented by a point in the complex plane. The complex number has the rectangular coordinates $\left(-\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$. Which of the following is one way to express the complex number using its polar coordinates (r, θ) ?

- (A) $\left(\cos\left(\frac{5\pi}{6}\right)\right) + i\left(\sin\left(\frac{5\pi}{6}\right)\right)$
(B) $\left(\cos\left(\frac{7\pi}{6}\right)\right) + i\left(\sin\left(\frac{7\pi}{6}\right)\right)$
(C) $\left(\cos\left(\frac{4\pi}{3}\right)\right) + i\left(\sin\left(\frac{4\pi}{3}\right)\right)$
(D) $\left(2 \cos\left(-\frac{\pi}{6}\right)\right) + i\left(2 \sin\left(-\frac{\pi}{6}\right)\right)$

19. A complex number is represented by a point in the complex plane. In polar coordinates, the complex number can be expressed as $\left(2 \cos\left(-\frac{\pi}{3}\right)\right) + i\left(2 \sin\left(-\frac{\pi}{3}\right)\right)$. Express the complex number using its rectangular coordinates (x, y) .

- (A) $(1, \sqrt{3})$ (B) $(1, -\sqrt{3})$ (C) $(-\sqrt{3}, 1)$ (D) $(2, 2\sqrt{3})$

20. A complex number is represented by a point in the complex plane. In polar coordinates, the complex number can be expressed as $\left(10 \cos\left(\frac{5\pi}{4}\right)\right) + i\left(10 \sin\left(\frac{5\pi}{4}\right)\right)$. Express the complex number using its rectangular coordinates (x, y) .

- (A) $(-5\sqrt{2}, -5\sqrt{2})$ (B) $(-5\sqrt{2}, 5\sqrt{2})$ (C) $(5\sqrt{2}, -5\sqrt{2})$ (D) $(5\sqrt{2}, 5\sqrt{2})$

