Example 3.4

Convert (i) 18° to radians (ii) -108° to radians.
Solution:
Now, $180^\circ = \pi$ radians gives $1^\circ = \frac{\pi}{180}$ radians
(i) $18^\circ = \frac{\pi}{180} \times 18$ radians $= \frac{\pi}{10}$ radians
(ii) $-108^\circ = \frac{\pi}{180} \times (-108)$ radians $= -\frac{3\pi}{5}$ radians.

Example 3.5

Convert (i) $\frac{\pi}{5}$ radians to degrees (ii) 6 radians to degrees.
Solution:
We know that π radians $= 180^\circ$ and thus,
(i) $\frac{\pi}{5}$ radians $= \frac{180^\circ}{5} = 36^\circ$
(ii) 6 radians $= \left(\frac{180}{\pi} \times 6\right)^\circ \approx \left(\frac{7 \times 180}{22} \times 6\right)^\circ = \left(343\frac{7}{11}\right)^\circ$

Multiple Choice Questions Based on the Examples

1. **Convert 45° to radians:**
   - a) $\frac{\pi}{4}$
   - b) $\frac{\pi}{3}$
   - c) $\frac{\pi}{6}$
   - d) $\frac{\pi}{2}$
2. **Convert -60° to radians:**
   - a) $-\frac{\pi}{4}$
   - b) $-\frac{\pi}{3}$
   - c) $-\frac{\pi}{6}$
   - d) $-\frac{\pi}{2}$
3. **What is the radian measure of 90°?**
   - a) $\frac{\pi}{2}$
   - b) π
   - c) $\frac{3\pi}{2}$
   - d) $\frac{\pi}{3}$
4. **Convert 120° to radians:**
   - a) $\frac{2\pi}{3}$
   - b) π
   - c) $\frac{4\pi}{3}$
   - d) $\frac{\pi}{6}$
5. **Convert 225° to radians:**

- a) $\frac{5\pi}{4}$
- b) $\frac{7\pi}{4}$
- c) $\frac{3\pi}{4}$
- d) $\frac{\pi}{4}$

6. **Convert 270° to radians:**
   - a) $\frac{3\pi}{2}$
   - b) π
   - c) $\frac{\pi}{2}$
   - d) $\frac{2\pi}{3}$
7. **Convert -150° to radians:**
   - a) $-\frac{5\pi}{6}$
   - b) $-\frac{\pi}{6}$
   - c) $-\frac{\pi}{4}$
   - d) $-\frac{\pi}{2}$
8. **Convert $\frac{3\pi}{4}$ radians to degrees:**
   - a) 135°
   - b) 45°
   - c) 90°
   - d) 180°
9. **Convert $-\frac{\pi}{6}$ radians to degrees:**
   - a) -60°
   - b) -45°
   - c) -30°
   - d) -90°
10. **What is the degree measure of π radians?**
    - a) 90°
    - b) 180°
    - c) 360°
    - d) 45°
11. **Convert $\frac{5\pi}{6}$ radians to degrees:**
    - a) 150°
    - b) 90°
    - c) 180°
    - d) 60°
12. **Convert $\frac{7\pi}{4}$ radians to degrees:**
    - a) 315°
    - b) 180°
    - c) 360°
    - d) 270°
13. **Convert 2π radians to degrees:**
    - a) 180°
    - b) 360°
    - c) 90°
    - d) 45°
14. **Convert $\frac{\pi}{3}$ radians to degrees:**
    - a) 60°
    - b) 90°
    - c) 120°
    - d) 45°
15. **Convert $\frac{2\pi}{5}$ radians to degrees:**
    - a) 72°
    - b) 36°
    - c) 45°
    - d) 54°

Answer Key

1. a
2. b
3. a
4. a
5. a
6. a
7. a
8. a
9. c
10. b
11. a
12. a
13. b
14. a
15. a

Answer Key

1. a
2. b
3. a
4. a
5. a
6. a
7. a
8. a
9. c
10. b
11. a
12. a
13. b
14. a
15. a