

3.70
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$$\int_{-\pi}^{\pi} (1 + \cos \frac{3x}{2})^2 dx = \int_{-\pi}^{\pi} (1 + 2\cos \frac{3x}{2} + \cos^2 \frac{3x}{2}) dx =$$

$$\cos^2 \frac{3x}{2} = \frac{1 + \cos 3x}{2}$$

$$= \int_{-\pi}^{\pi} (1 + 2\cos \frac{3x}{2} + \frac{1 + \cos 3x}{2}) dx =$$

$$x + \frac{2}{\frac{3}{2}} \sin \frac{3x}{2} + \frac{1}{2} x + \frac{1}{2 \cdot 3} \sin 3x \Big|_{-\pi}^{\pi} = 1.5x + \frac{4}{3} \sin \frac{3x}{2} + \frac{1}{6} \sin 3x \Big|_{-\pi}^{\pi} =$$

$$(1.5\pi + \frac{4}{3} + 0) - (-1.5\pi - \frac{4}{3} + 0) = 3\pi - \frac{8}{3}$$