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A/6

B

For complete circle

$$I_{A} = I_{O} + Ar^{2} = \frac{1}{2}Ar^{2} + Ar^{2}$$
 $= \frac{3}{2}Ar^{2}$

For half circle

 $I_{A} = \frac{1}{2}(\frac{3}{2}\pi r^{4}) = \frac{3}{4}\pi r^{4}$

For half circle, $I_{O} = \frac{1}{4}\pi r^{4}$
 $I_{B} = I_{C} + A(r - r)^{2} = I_{O} - Ar^{2} + A(r - r)^{2}$
 $= I_{O} + A(r^{2} - 2rr)$
 $= \frac{1}{4}\pi r^{4} + \frac{\pi}{2}r^{4}(1 - \frac{8}{3\pi}) = r^{4}(\frac{3\pi}{4} - \frac{4}{3})$

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