

## FTC and Avg Value Practice (DO 5!)

Date \_\_\_\_\_ Period \_\_\_\_\_

**Evaluate each definite integral.**

1)  $\int_0^5 (x + 2) dx$

2)  $\int_0^4 (-x + 2) dx$

3)  $\int_{-2}^{-1} (2x + 1) dx$

4)  $\int_{-4}^1 (2x + 2) dx$

5)  $\int_{-\frac{\pi}{4}}^0 2 \cdot \sec^2 x dx$

6)  $\int_{\frac{\pi}{2}}^{\frac{2\pi}{3}} -2\csc x \cdot \cot x dx$

$$7) \int_{-\frac{\pi}{4}}^{\frac{\pi}{4}} \sec x \cdot \tan x \, dx$$

$$8) \int_{-\frac{\pi}{4}}^{\frac{\pi}{6}} \sin x \, dx$$

**For each problem, find the average value of the function over the given interval.**

$$9) f(x) = -\cos x; \left[-\frac{\pi}{4}, \frac{\pi}{3}\right]$$

$$10) f(x) = -\frac{x^2}{2} + 3x - \frac{5}{2}; [1, 6]$$

$$11) f(x) = 2x^2 - 16x + 32; [4, 5]$$

$$12) f(x) = -2\csc x \cdot \cot x; \left[-\frac{\pi}{2}, -\frac{\pi}{4}\right]$$

## Answers to FTC and Avg Value Practice (DO 5!) (ID: 1)

$$1) \frac{45}{2} = 22.5$$

$$2) 0$$

$$3) -2$$

$$4) -5$$

$$5) 2$$

$$6) \frac{-6 + 4\sqrt{3}}{3} \approx 0.309$$

$$7) 0$$

$$8) \frac{-\sqrt{3} + \sqrt{2}}{2} \approx -0.159$$

$$9) \frac{-6\sqrt{3} - 6\sqrt{2}}{7\pi} \approx -0.858$$

$$10) \frac{5}{6} \approx 0.833$$

$$11) \frac{2}{3} \approx 0.667$$

$$12) \frac{-8\sqrt{2} + 8}{\pi} \approx -1.055$$