8.6 Area – More than Two Intersections

Calculus Name: _____ **CA #1**

The given functions create boundaries for multiple regions.

1. $y = (x-1)^3 - 1$ and $y = 2x - 3$

   a. Find x-values of the points of intersection, and label them from smallest to largest as A, B, and C.

   $A =$

   $B =$

   $C =$

   b. Set up integrals

2. $y = -2x^3 + 3x^2 + 5x, y = x^2 - 1$

   a. Find x-values of the points of intersection, and label them from smallest to largest as A, B, and C.

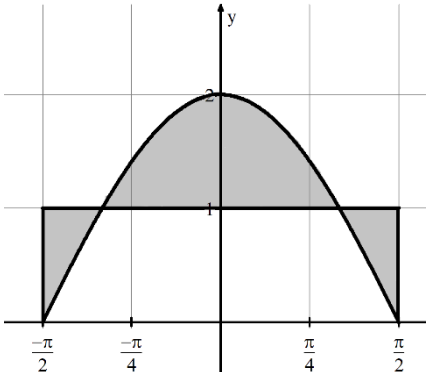
   $A =$

   $B =$

   $C =$

   b. Set up integrals

3. The figure shows the graph of $y = 2\cos(x)$, and the line $y = 1$, for $-\frac{\pi}{2} \le x \le \frac{\pi}{2}$. Write a set of integrals that represents the sum of all the areas of the shaded regions. Use exact values for your boundaries, not rounded decimals.



Answers to 8.6 CA #1

1a. $A = -0.414$ $B = 1$ $C = 2.414$	1b. $\int_A^B ((x-1)^3 - 2x + 2)\,dx + \int_B^C (2x - 2 - (x-1)^3)\,dx$	2a. $A = -1$ $B = -0.2247$ $C = 2.2247$
2b. $\int_A^B (2x^3 - 2x^2 - 5x - 1)\,dx + \int_B^C (-2x^3 + 2x^2 + 5x + 1)\,dx$	3. $\int_{-\frac{\pi}{3}}^{\frac{\pi}{3}} (1 - 2\cos x)\,dx + \int_{-\frac{\pi}{2}}^{-\frac{\pi}{3}} (2\cos x - 1)\,dx + \int_{\frac{\pi}{3}}^{\frac{\pi}{2}} (1 - 2\cos x)\,dx$	