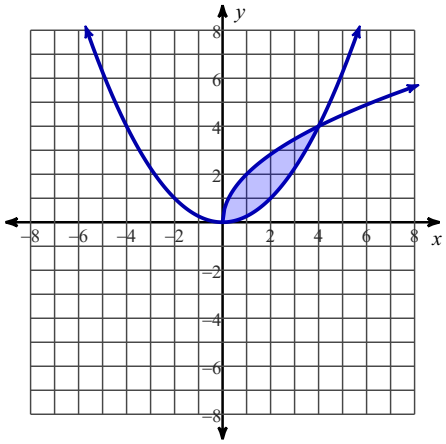
AP Calculus AB Name _____

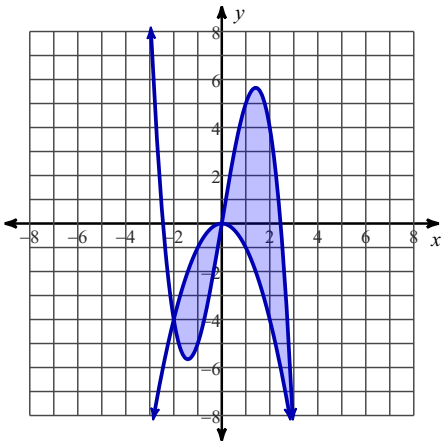
Area Between Curves

For each, set up integral(s) that will find the exact area of the shaded region. Find each antiderivative by hand. Evaluate using technology if desired.

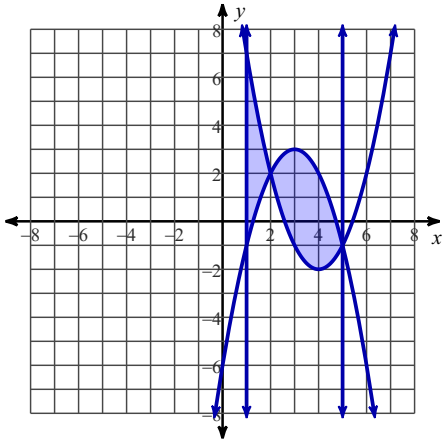
1) $y = 2\sqrt{x},\ y = \dfrac{x^2}{4}$



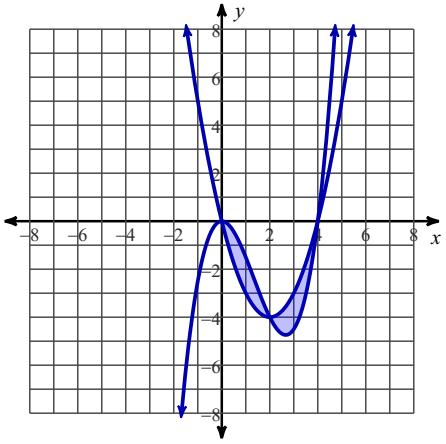
2) $y = -x^3 + 6x,\ y = -x^2$



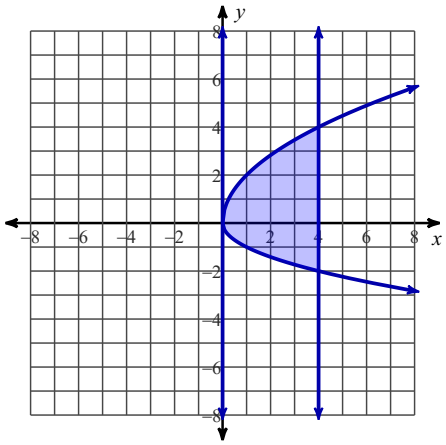
3) $y = x^2 - 8x + 14,\ y = -x^2 + 6x - 6,$
$x = 1,\ x = 5$



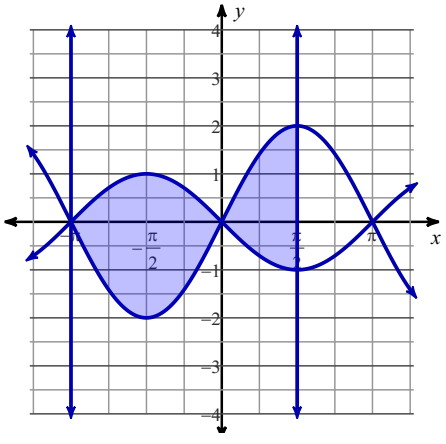
4) $y = \dfrac{x^3}{2} - 2x^2,\ y = x^2 - 4x$



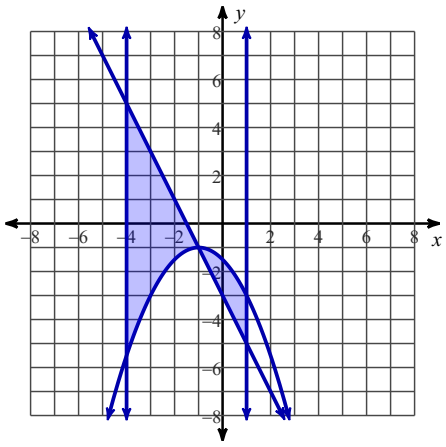
5) $y = 2\sqrt{x},\ y = -\sqrt{x},$
$x = 0,\ x = 4$



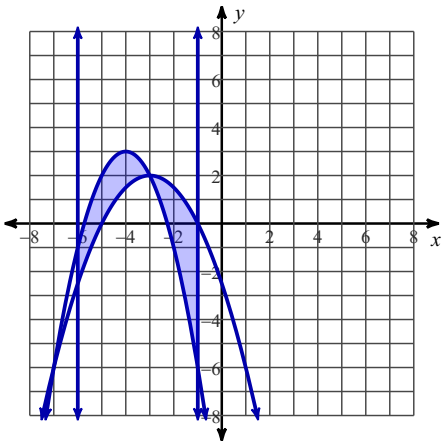
6) $y = 2\sin x,\ y = -\sin x,$
$x = -\pi,\ x = \dfrac{\pi}{2}$



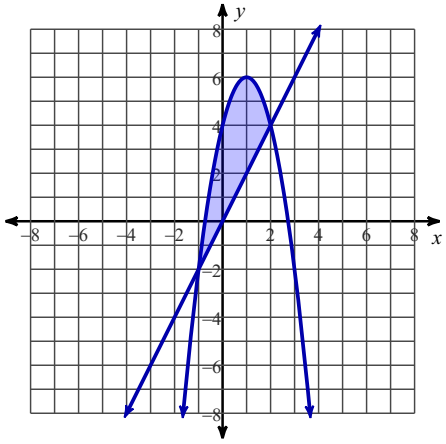
7) $y = -\frac{x^2}{2} - x - \frac{3}{2}$, $y = -2x - 3$,
$x = -4$, $x = 1$



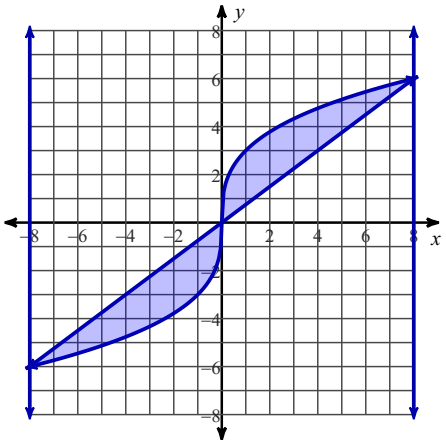
8) $y = -x^2 - 8x - 13$, $y = -\frac{x^2}{2} - 3x - \frac{5}{2}$,
$x = -6$, $x = -1$



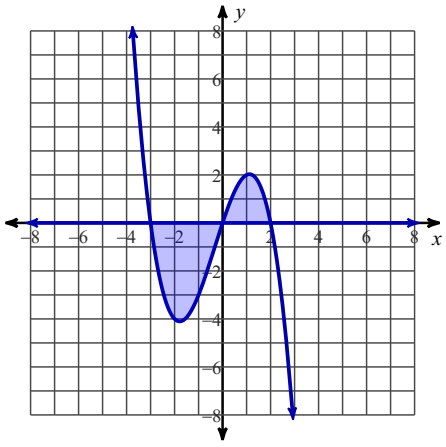
9) $y = -2x^2 + 4x + 4$, $y = 2x$



10) $y = 3\sqrt[3]{x}$, $y = \frac{3}{4}x$,
$x = -8$, $x = 8$



11) $y = -\frac{x^3}{2} - \frac{x^2}{2} + 3x$, $y = 0$



12) $y = 3\sqrt{x}$, $y = 2\sqrt{x}$,
$x = 0$, $x = 4$