1. (3 points) The graphs of $y = 2x$, $y = x + 1$, and $y = -2x + 16$ are sketched below and the area bounded by the curves is shaded in. Find the exact area of this shaded region.
2. (3 points) The graphs of $x = y^2 - 14$ and $x = 2y + 10$ are sketched below and the area between the two curves is shaded in. Find the exact area of this shaded region.
3. (2 points) One of the ten choices below gives the exact value of the definite integral $\int_0^{12} f(x) \, dx$. Circle the correct choice.

(a) 36  (b) 54  (c) 72  (d) 90  (e) 108
(f) 126  (g) 144  (h) 162  (i) 180  (j) 198
4. (2 points) One of the ten choices below gives the exact value of the definite integral $\int_{-4}^{10} f(x) \, dx$. Circle the correct choice.

(a) 0  (b) 4  (c) 8  (d) 12  (e) 16
(f) 20  (g) 24  (h) 28  (i) 32  (j) 36