

8 (#10, pg. 474)

$$\begin{aligned}
 \text{a) } P(X+Y > 0) &= P(W > 0) \quad \text{where } W = X+Y \\
 &= P\left(\frac{W-5}{3} > \frac{-5}{3}\right) \\
 &= P(Z > -1.67) \\
 &= 1 - \Phi(-1.67) \\
 &= 1 - .0475 = \underline{\underline{.9525}}
 \end{aligned}$$

$$\begin{aligned}
 \text{b) } P(X-Y < 2) &= P(V < 2) \quad \text{where } V = X-Y \\
 &= P\left(\frac{V-(-3)}{3} < \frac{2+3}{3}\right) \\
 &= P(Z < 1.67) \\
 &= \Phi(1.67) = \underline{\underline{.9525}}
 \end{aligned}$$

$$\begin{aligned}
 \text{c) } P(3X+4Y > 20) &= P(U > 20) \quad \text{where } U = 3X+4Y \\
 &= P\left(\frac{U-19}{\sqrt{130}} > \frac{20-19}{\sqrt{130}}\right) \\
 &= P(Z > .088) = 1 - \Phi(1.09) \\
 &= 1 - .5359 = \underline{\underline{.4641}}
 \end{aligned}$$