

### Quiz 21.2C

Wires  $I_6$  and  $I_3$  are parallel with currents pointing in opposite directions as shown below.

- a) Find the magnitude and direction of the total magnetic field at point A.
- b) Find the magnitude and direction of the total magnetic field at point P.
- c) Suppose a long straight wire  $I_4$  is perpendicular to the page and carries a current of 4.20 Amps into the page, and it passes through the plane of the page at point P. What is the magnitude and direction of the magnetic force felt by a 1.00 meter length of this wire?
- d) Suppose a proton is passing through point P, moving at a rate of  $3.85 \times 10^6$  m/s in a direction  $27.0^\circ$  below  $+x$ . What is the magnitude and direction of the magnetic force on this proton (wire  $I_4$  is no longer present)?

