Problems

2. A raindrop of mass 3.35×10^{-5} kg falls vertically at
[W] constant speed under the influence of gravity and
air resistance. Model the drop as a particle. As it falls
100 m, what is the work done on the raindrop (a) by
the gravitational force and (b) by air resistance?

5. A block of mass $m =$
2.50 kg is pushed a dis-
tance $d = 2.20$ m along
a frictionless, horizontal
table by a constant applied
force of magnitude $F =$
16.0 N directed at an angle
$\theta = 25.0°$ below the hori-
zontal as shown in Figure P7.5. Determine the work
done on the block by (a) the applied force, (b) the
normal force exerted by the table, (c) the gravitational
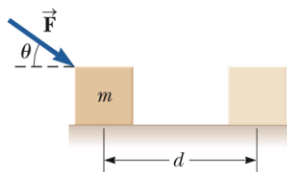force, and (d) the net force on the block.

Figure P7.5

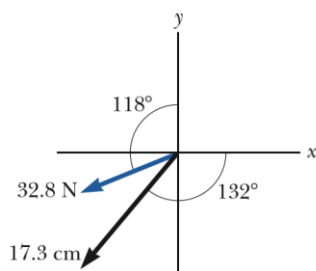**10.** Find the scalar product of the vectors in Figure P7.10.

Figure P7.10

11. A force $\vec{F} = (6\hat{i} - 2\hat{j})$ N acts on a particle that under-
[M] goes a displacement $\Delta\vec{r} = (3\hat{i} + \hat{j})$ m. Find (a) the work
done by the force on the particle and (b) the angle
between $\vec{F}$ and $\Delta\vec{r}$.

15. A particle is subject to a force F_x that varies with posi-
[W] tion as shown in Figure P7.15. Find the work done by
the force on the particle as it moves (a) from $x = 0$ to
$x = 5.00$ m, (b) from $x = 5.00$ m to $x = 10.0$ m, and
(c) from $x = 10.0$ m to $x = 15.0$ m. (d) What is the total
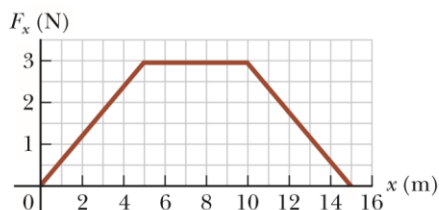work done by the force over the distance $x = 0$ to $x =$
15.0 m?

Figure P7.15 Problems 15 and 34.

26. The force acting on a particle is $F_x = (8x - 16)$, where
F is in newtons and x is in meters. (a) Make a plot of
this force versus x from $x = 0$ to $x = 3.00$ m. (b) From
your graph, find the net work done by this force on the
particle as it moves from $x = 0$ to $x = 3.00$ m.

2) ±3.28 × 10-2 J   5) 31.9 J, 0, 31.9 J   10) 5,33 J   11) 16 J, 36.9   15) 7.50 J, 15J, ,7.50J, 30J
26) -12.0 J