Ch 18 - Worksheet

P # I

a) $R_{eq} = r + R$
$= 1.5\,\Omega + 20\,\Omega$
$= 21.5\,\Omega$

$V_{eq} = I_{eq} \cdot R_{eq}$
$9\,V = I_{eq} \cdot (21.5\,\Omega)$

$\boxed{I_{eq} = .42\,A}$

b) $I_{xy} = I_{eq} = .42\,A$
$R_{xy} = R = 20\,\Omega$

$V_{xy} = I_{xy} \cdot R_{xy}$
$= (.42\,A)(20\,\Omega)$

$\boxed{V_{xy} = 8.37\,V}$

c) $R_{eq} = r + R$
$= 1.5 + 30\,\Omega$
$= 31.5\,\Omega$

$V_{eq} = I_{eq} \cdot R_{eq}$
$9\,V = I_{eq} \cdot (31.5\,\Omega)$

$\boxed{I_{eq} = .29\,A}$

d) $I_{xy} = I_{eq} = .29\,A$
$R_{xy} = R = 30\,\Omega$

$V_{xy} = I_{xy} \cdot R_{xy}$
$= (.29\,A)(30\,\Omega)$

$\boxed{V_{xy} = 8.57\,V}$