HW 7

John Playfortty

2.2 2. Upper Triangular, so only multiply main diagonal:
$= 3 \cdot 5 \cdot -2 = \boxed{-30}$

b. Lower Triangular, again main diagonal:
$\sqrt{2} \cdot \sqrt{2} \cdot -1 \cdot 1 = \boxed{-2}$

c. 1st and 3rd row are the same, so $= 0$

d. row 2 = 2 · row 1, so again, $= 0$

4. $$\det \begin{bmatrix} 3 & 6 & -9 \\ 0 & 0 & -2 \\ -2 & 1 & 5 \end{bmatrix} = 3 \cdot \det \begin{bmatrix} 1 & 2 & -3 \\ 0 & 6 & -2 \\ -2 & 1 & 5 \end{bmatrix} = -3 \det \begin{bmatrix} 1 & 2 & -3 \\ -2 & 1 & 5 \\ 0 & 0 & -2 \end{bmatrix}$$

$$= -3 \det \begin{bmatrix} 1 & 2 & -3 \\ 0 & 5 & -1 \\ 0 & 0 & -2 \end{bmatrix} = -3 \cdot -10 = \boxed{30}$$

6. $$\det \begin{bmatrix} 1 & -3 & 0 \\ -2 & 4 & 1 \\ 5 & -2 & 2 \end{bmatrix} = \det \begin{bmatrix} 1 & -3 & 0 \\ 0 & -2 & 1 \\ 0 & 13 & 2 \end{bmatrix} = -2 \det \begin{bmatrix} 1 & -3 & 0 \\ 0 & 1 & -\frac{1}{2} \\ 0 & 13 & 2 \end{bmatrix}$$

$$= -2 \cdot 13 \cdot \det \begin{bmatrix} 1 & -3 & 0 \\ 0 & 1 & -\frac{1}{2} \\ 0 & 1 & \frac{2}{13} \end{bmatrix} = -2 \cdot 13 \cdot \det \begin{bmatrix} 1 & -3 & 0 \\ 0 & 1 & -\frac{1}{2} \\ 0 & 0 & \frac{17}{26} \end{bmatrix}$$

$$= -2 \cdot 13 \cdot 1 \cdot 1 \cdot \frac{17}{26} = \boxed{-17}$$

$4 + \frac{13}{26}$

8. $$\det \begin{bmatrix} 1 & -2 & 3 & 1 \\ 5 & -9 & 6 & 3 \\ -1 & 2 & -6 & -2 \\ 2 & 8 & 6 & 1 \end{bmatrix} = \det \begin{bmatrix} 1 & -2 & 3 & 1 \\ 0 & 1 & -9 & -2 \\ 0 & 0 & -3 & -1 \\ 0 & 12 & 0 & -1 \end{bmatrix} = \det \begin{bmatrix} 1 & -2 & 3 & 1 \\ 0 & 1 & [redacted] & \\ 0 & 0 & -3 & -1 \\ 0 & 12 & 0 & -1 \end{bmatrix}$$

$$= \det \begin{bmatrix} 1 & -2 & 3 & 1 \\ 0 & 1 & 0 & 2 \\ 0 & 0 & -3 & -1 \\ 0 & 0 & 0 & -13 \end{bmatrix} = 1 \cdot 1 \cdot -3 \cdot -13 = 39$$

12. This is two switches, so equals $-1 \cdot -1 \cdot -6 = -6$.

20 Points,

b. mult 1st row by 3, second row by -1, third row by 4

so $= 3 \cdot -1 \cdot 4 \cdot -6 = 72$

c. add third row to 1st row. no change $= -6$

d. multiply 1st row by -3. add 4 row 2 to row 3

$-3 \cdot$ no change

$= -3 \cdot -6 = 18$.