

1.

(a)

postfix:

$$\begin{aligned} & ((D-B)+C) \\ \Rightarrow & ((DB-)+C) \\ \Rightarrow & DB-C+ \# \end{aligned}$$

prefix:

$$\begin{aligned} & (D-B)+C) \\ \Rightarrow & (-DB)+C) \\ \Rightarrow & +-DBC \# \end{aligned}$$

(b)

postfix:

$$\begin{aligned} & ((A*B)+(C*D)) \\ \Rightarrow & ((AB*)+(CD*)) \\ \Rightarrow & AB*CD*+ \# \end{aligned}$$

prefix:

$$\begin{aligned} & ((A*B)+(C*D)) \\ \Rightarrow & (*AB)+(*CD)) \\ \Rightarrow & +*AB*CD \# \end{aligned}$$

(c)

postfix:

$$\begin{aligned} & (((A+B)*C)-(D*F))+C) \\ \Rightarrow & (((AB+)*C)-(DF*))+C) \\ \Rightarrow & (((AB+C*)-(DF*))+C) \\ \Rightarrow & ((AB+C*DF*-)+C) \\ \Rightarrow & AB+C*DF*-C+ \# \end{aligned}$$

prefix:

$$\begin{aligned} & (((A+B)*C)-(D*F))+C) \\ \Rightarrow & ((((+AB)*C)-(*DF))+C) \\ \Rightarrow & (((*+ABC)-(*DF))+C) \\ \Rightarrow & ((-*+ABC*DF)+C) \\ \Rightarrow & +-*+ABC*DFC \# \end{aligned}$$

(d)

postfix:

$$\begin{aligned} & (((A-(2*(B+C)))-(D*E))*F) \\ \Rightarrow & (((A-(2*(BC+)))-(DE*))*F) \\ \Rightarrow & (((A-(2BC+*))-(DE*))*F) \\ \Rightarrow & (((A2BC+*-)-(DE*))*F) \\ \Rightarrow & ((A2BC+*-DE*-)*F) \\ \Rightarrow & A2BC+*-DE*-F* \# \end{aligned}$$

prefix:

$$\begin{aligned} & (((A-(2*(B+C)))-(D*E))*F) \\ \Rightarrow & (((A-(2*(+BC)))-(DE*))*F) \\ \Rightarrow & (((A-(*2+BC))-(DE*))*F) \\ \Rightarrow & (((-A*2+BC)-(DE*))*F) \\ \Rightarrow & ((--A*2+BC*DE)*F) \\ \Rightarrow & *--A*2+BC*DEF \# \end{aligned}$$

2.

a.

$$\begin{aligned} & = A*B-C+D \\ & = 2*3-4+5=7 \# \end{aligned}$$

b.

$$\begin{aligned} & = A*(B+C)-D \\ & = 2*(3+4)-5=9 \# \end{aligned}$$

3、

c、

Original	stack	output
$(A+B)*C-D*F+C$		
$A+B)*C-D*F+C$	(
$+B)*C-D*F+C$	(	A
$B)*C-D*F+C$	+(	A
$)*C-D*F+C$	+(	AB
$*C-D*F+C$	)+(	AB
$C-D*F+C$	*	AB+
$-D*F+C$	*	AB+C
$D*F+C$	-	AB+C*
$*F+C$	-	AB+C*D
$F+C$	*-	AB+C*D
$+C$	*-	AB+C*DF
C	+	AB+C*DF* -
		<u>AB+C*DF*-C+</u> #

d、

Original	stack	output
$(A-2*(B+C)-D*E)*F$		
$A-2*(B+C)-D*E)*F$	(
$-2*(B+C)-D*E)*F$	(	A
$2*(B+C)-D*E)*F$	-(	A
$*(B+C)-D*E)*F$	-(	A2
$(B+C)-D*E)*F$	*-(	A2
$B+C)-D*E)*F$	(*-(	A2
$+C)-D*E)*F$	(*-(	A2B
$C)-D*E)*F$	+(*-(	A2B
$)-D*E)*F$	+(*-(	A2Bc
$-D*E)*F$	)+( *-(	A2Bc
$-D*E)*F$	*-(	A2Bc+
$D*E)*F$	-(	A2Bc+* -
$*E)*F$	-(	A2Bc+*-D
$E)*F$	*-(	A2Bc+*-D
$)*F$	*-(	A2Bc+*-DE

*F

F

*

A2Bc+*-DE*-

A2Bc+*-DE*-

A2Bc+*-DE*-F*
#