

Name ANSWER KEY \_\_\_\_\_ points

Express in the form  $a+bi$ :

$$\begin{aligned} \text{a. } \frac{3-2i}{5+4i} &= \frac{3-2i}{5+4i} \cdot \frac{5-4i}{5-4i} = \frac{15-22i+8i^2}{5^2+4^2} = \frac{15-22i-8}{25+16} = \frac{7-22i}{41} \\ &= \boxed{\frac{7}{41} - \frac{22}{41}i} \end{aligned}$$

$$\text{b. } i^{119} = i^{4 \cdot 29 + 3} = (i^4)^{29} \cdot i^3 = 1^{29} \cdot i^3 = \boxed{-i}$$