$i = \sqrt{-1}$, $i^2 = -1$, $i^3 = -i$, $i^4 = 1$

$2 + 3i + 7i^2 + 5i^3 + 9i^4$

$2 + 3i + 7(-1) + 5(-i) + 9(1)$

$2 + 3i - 7 - 5i + 9$

$\boxed{4 - 2i}$ — complex number

$(2 - 3i) - (6 - 18i)$

$2 - 3i - 6 + 18i$

$\boxed{-4 + 15i}$

$(7 - 10i) - (3 + 30i)$

$7 - 10i - 3 - 30i$

$\boxed{4 - 40i}$

$(-10i) + (-40 + 8i)$

$-2i - 40$

$\boxed{-40 - 2i}$

$(35 - 23i) + (13 + 25i)$

$\boxed{48 + 2i}$

$(-33 - 2i) - (50 + 9i)$

$-33 - 2i - 50 - 9i$

$\boxed{-83 - 11i}$

$3(-2 + 10i)$

$-6 + 30i$

$-6i(5 + 7i)$

$-30i - 42i^2$

$-30i - 42(-1)$

$-30i + 42$

$\boxed{42 - 30i}$

$(1+2i)(3+i)$

$3+i+6i+2i^2$

$3+7i+2(-1)$

$-2+3+7i$

$\boxed{1+7i}$

$(4+i)(7-3i)$

$28-12i+7i-3i^2$

$28-5i-3(-1)$

$28+3-5i$

$\boxed{31-5i}$

$(2-i)(2+i)$

$4+\cancel{2i-2i}-i^2$

$4-i^2$

$4-(-1)$

$4+1$

$\boxed{5}$

$(1+i)(1+i)$

$1+i+i+i^2$

$\cancel{1+2i-1}$

$\boxed{2i}$

$(a-bi)(a+bi)$

$a^2+\cancel{abi-abi}-bi^2$

$a^2-b^2i^2$

$a^2-b^2(-1)$

$\boxed{a^2+b^2}$

$(1+3i)^2\cdot(2+i)$

$(1+3i)(1+3i)(2+i)$

$1+3i+3i+9i^2$

$(1+6i+9i^2)(2+i)$

$2+i+12i+6i^2+18i^2+9i^3$

$2+13i+24i^2+9i^3$

$2+13i+24(-1)+9(-i)$

$2+13i-24-9i$

$\boxed{-22+4i}$

$15i(-i-1)$

$-15i^2-15i$

$-15(-1)-15i$

$\boxed{15-15i}$

$-6i(6-2i)$

$-36i+12i^2$

$-36i+12(-1)$

$\boxed{-12-36i}$

$-3i(8i+5)$

$-24i^2-15i$

$-24(-1)-15i$

$24-15i$

$9i(-4-7i)$

$-36i-63i^2$

$-36i-63(-1)$

$63-36i$

$-5i(5i-5)$

$-25i^2+25i$

$-25(-1)+25i$

$25+25i$

$11(6i-9)$

$66i-99$

$-99+66i$

$5i(5+3i)$

$25i+15i^2$

$25i+15(-1)$

$-15+25i$

$14(-2i+6)$

$-28i+84$

$84-28i$

$(7-10i)-(3+30i)$

$7-10i-3-30i$

$4-40i$

$(-3+71i)+(9)$

$6+71i$

$(21+2i)+(13+81)$

$34+10i$

$(-14+3i)-(14i)$

$-14+3i-14i$

$-14-11i$

$8(11i+2)$

$88i+16$

$\boxed{16+88i}$

$-6i(6-2i)$

$-36i+12i^2$

$-36i+12(-1)$

$\boxed{-12-36i}$

$(1+i)\cdot(3-5i)$

$3-5i+3i-5i^2$

$3-2i-5(-1)$

$3-2i+5$

$\boxed{8-2i}$

$(-2-3i)\cdot(-5-2i)$

$10+4i+15i+6i^2$

$10+19i+6(-1)$

$10-6+19i$

$\boxed{4+19i}$

$2x^2+5=6x$

$2x^2-6x+5=0$

$\frac{-b\pm\sqrt{b^2-4ac}}{2a}=\frac{-(-6)\pm\sqrt{(-6)^2-4(2)(5)}}{2(2)}$

$\frac{6\pm\sqrt{36-40}}{4}=\frac{6\pm\sqrt{-4}}{4}=\frac{6\pm 2i}{4}=\boxed{\frac{3\pm i}{2}}$

$-9x^2 + x + 3 = 0$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-1 \pm \sqrt{(1)^2 - 4(-9)(3)}}{2(-9)} = \frac{-1 \pm \sqrt{1 + 108}}{-18}$$

$$\frac{-1 \pm \sqrt{109}}{-18} = \frac{1 \pm \sqrt{109}}{18} = \boxed{\frac{1}{18} \pm \frac{\sqrt{109}}{18}}$$

$3x^2 + 9x + 17 = 0$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-9 \pm \sqrt{(9)^2 - 4(3)(17)}}{2(3)} = \frac{-9 \pm \sqrt{81 - 204}}{6}$$

$$\frac{-9 \pm \sqrt{-123}}{6} = \frac{-9 \pm 123i}{6} = \frac{-9}{6} \pm \frac{123i}{6} = \boxed{-\frac{3}{2} \pm \frac{123i}{6}}$$

$5x^2+3x+1=0$

$$\frac{-b\pm\sqrt{b^2-4ac}}{2a}=\frac{-3\pm\sqrt{(3)^2-4(5)(1)}}{2(5)}=\frac{-3\pm\sqrt{9-20}}{10}$$

$$\frac{-3\pm\sqrt{-11}}{10}=\frac{-3\pm i\sqrt{11}}{10}=\boxed{-\frac{3}{10}\pm\frac{\sqrt{11}}{10}i}$$

$2x^2+3x-11=0$

$$\frac{-b\pm\sqrt{b^2-4ac}}{2a}=\frac{-3\pm\sqrt{(3)^2-4(2)(-11)}}{2(2)}=\frac{-3\pm\sqrt{9+88}}{4}$$

$$\frac{-3\pm\sqrt{97}}{4}=\boxed{-\frac{3}{4}\pm\frac{\sqrt{97}}{4}}$$

$(70+22i)-(71+70i)$

$70+22i-71-70i$

$\boxed{-1-48i}$

$3i(3+2i)$

$9i+6i^2$

$9i+6(-1)$

$\boxed{-6+9i}$

$-9x^2+x+3=0$

$$\frac{-b\pm\sqrt{b^2-4ac}}{2a}=\frac{-1\pm\sqrt{(1)^2-4(-9)(3)}}{2(-9)}=\frac{-1\pm\sqrt{1+108}}{-18}$$

$$\frac{-1\pm\sqrt{109}}{-18}=\boxed{\frac{1}{18}\pm\frac{\sqrt{109}}{18}}$$

$(2-i)\cdot(-3+2i)$

$-6+4i+3i-2i^2$

$-6+7i-2(-1)$

$-6+7i+2$

$\boxed{-4+7i}$

$(-30i)+(52-30i)$

$-60i+52$

$\boxed{52-60i}$

$11i(-8+10i)$

$-88i+110i^2$

$-88i+110(-1)$

$\boxed{-110-88i}$

$(-19+7i)-(29+32i)$

$-19+7i-29-32i$

$\boxed{-48-25i}$

$(5-5i)\cdot(-3+5i)$

$-15+25i+15i-25i^2$

$-15+40i-25(-1)$

$-15+25+40i$

$\boxed{10+40i}$

$\pm\sqrt{-18}$

$\pm i\sqrt{18}$

$9 \cdot 2$

$3 \cdot 3$

$\boxed{\pm 3i\sqrt{2}}$

$(-4-5i)\cdot(1-i)$

$-4+4i-5i+5i^2$

$-4-i+5(-1)$

$-4-5-i$

$\boxed{-9-i}$

$3x^2 + 9x + 17 = 0$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-9 \pm \sqrt{(9)^2 - 4(3)(17)}}{2(3)}$$

$$\frac{-9 \pm \sqrt{81 - 204}}{6} = \frac{-9 \pm \sqrt{-123}}{6} = \frac{-9 \pm i\sqrt{123}}{6}$$

$$= \boxed{-\frac{3}{2} \pm \frac{\sqrt{123}}{6} i}$$