28. A plane can go 560 miles with the wind in the same amount of time it takes to go 410 miles against the wind. If the wind is 56 miles per hour, what is the average speed of the plane going against the wind?

_____

Simplify.

29. $4\sqrt{2xy^2} + \sqrt[3]{40x^6} - y\sqrt[3]{5x} - \sqrt{8x^6}$

$$4y\sqrt{2x} + 2x^2\sqrt[3]{5} - y\sqrt[3]{5x} - 2x^3\sqrt{2}$$

30. $\left(\dfrac{6^{\frac{1}{2}}}{6^{\frac{1}{3}}}\right)^{\frac{3}{5}} = \dfrac{6^{\frac{3}{10}}}{6^{\frac{3}{15}}} = \dfrac{6^{3/10}}{6^{1/5}} = \boxed{6^{1/10}}$

31. $\dfrac{(10-\sqrt{2})}{\sqrt{5}-\sqrt{3}} \dfrac{(\sqrt{5}+\sqrt{3})}{\sqrt{5}+\sqrt{3}}$

$$\dfrac{10\sqrt{5} + 10\sqrt{3} - \sqrt{10} - \sqrt{6}}{5-3}$$

$$\boxed{\dfrac{10\sqrt{5} + 10\sqrt{3} - \sqrt{10} - \sqrt{6}}{2}}$$

32. $\dfrac{x^{\frac{5}{4}}y^{\frac{2}{3}}}{xy} = \dfrac{x^{1/4}}{y^{1/3}} \cdot \dfrac{x^{1/4}}{\sqrt[3]{y}} \cdot \dfrac{\sqrt[3]{y^2}}{\sqrt[3]{y^2}} =$

$$\boxed{\dfrac{x^{1/4} x^{2/3}}{y}}$$

33. $\sqrt[5]{(2x^2)^3(2x^2)^7}$

$$\sqrt[5]{2^3 x^6 2^7 x^{14}}$$

$$\sqrt[5]{2^{10} x^{20}}$$

$$2^2 x^4 = \boxed{4x^4}$$

34. $\sqrt[5]{\dfrac{x^5}{y^3}} = \dfrac{x}{\sqrt[5]{y^3}} \cdot \dfrac{\sqrt[5]{y^2}}{\sqrt[5]{y^2}} =$

$$\boxed{\dfrac{xy^{2/5}}{y}}$$

35. $5a^2b\sqrt[4]{24a^2c^6} \cdot 3ac^2\sqrt[4]{20a^5bc}$

$$15a^3bc^2\sqrt[4]{480a^7bc^7}$$

$$15a^3bc^2\sqrt[4]{16\cdot30a^7bc^7}$$

$$\boxed{30a^4bc^3\sqrt[4]{30a^3bc^3}}$$

36. $\left(3\sqrt{3}+5\sqrt{2}\right)^2$ $(3\sqrt{3}+5\sqrt{2})$

$$9\cdot3 + 15\sqrt{6} + 15\sqrt{6} + 25\cdot2$$

$$\boxed{77 + 30\sqrt{6}}$$