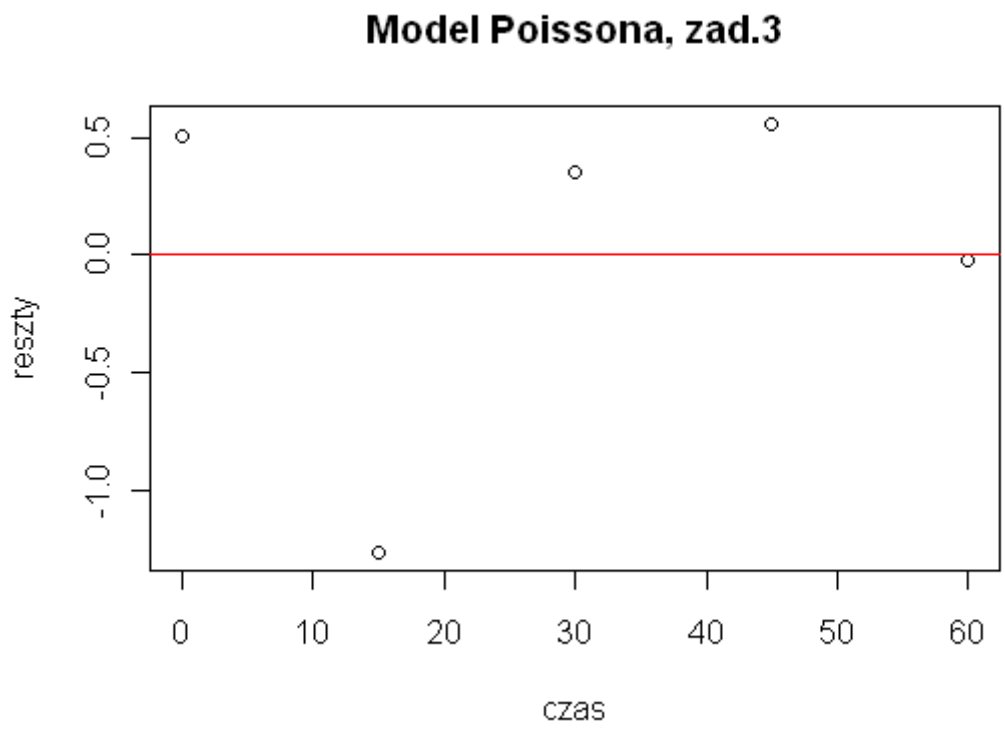
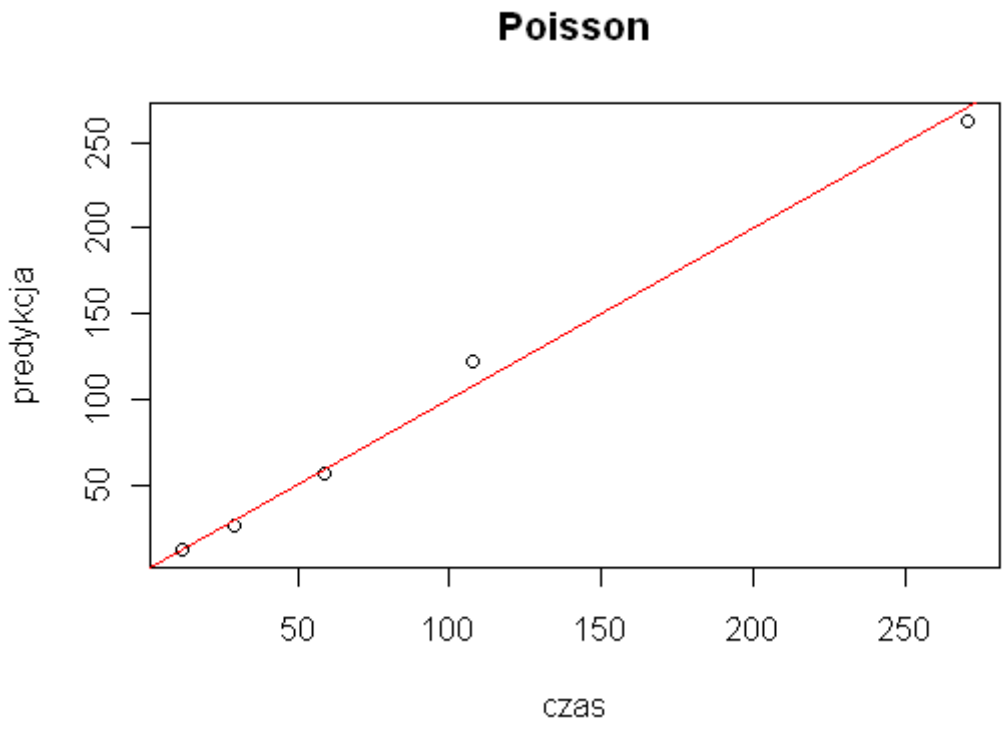
*

```
reszty_glm_wykres <- function (x, model,osx="x",tytul="reszty w modelu GLIM")
{
  plot(x,residuals(model), xlab=osx, ylab="reszty",main=tytul)
  abline(h=0,col=2)
}

wirus <- data.frame(cbind(c(0,15,30,45,60),c(271,108,59,29,12)))
colnames(wirus) <- c("czas","zmiany")

> with(wirus,
+       mod.pois <- glm(zmiany~czas,family=poisson)
+ )
> summary(mod.pois)

Call:
glm(formula = zmiany ~ czas, family = poisson)

Deviance Residuals:
       1         2         3         4         5
 0.50409  -1.26523   0.35037   0.55886  -0.02393

Coefficients:
             Estimate Std. Error z value Pr(>|z|)
(Intercept)  5.571340   0.056714   98.24   <2e-16 ***
czas        -0.051326   0.002972  -17.27   <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for poisson family taken to be 1)

    Null deviance: 413.1314  on 4  degrees of freedom
Residual deviance:   2.2906  on 3  degrees of freedom
AIC: 35.719

Number of Fisher Scoring iterations: 3

> reszty_glm_wykres(wirus$czas, mod.pois, "czas", "Model Poissona, zad.3")
```



*

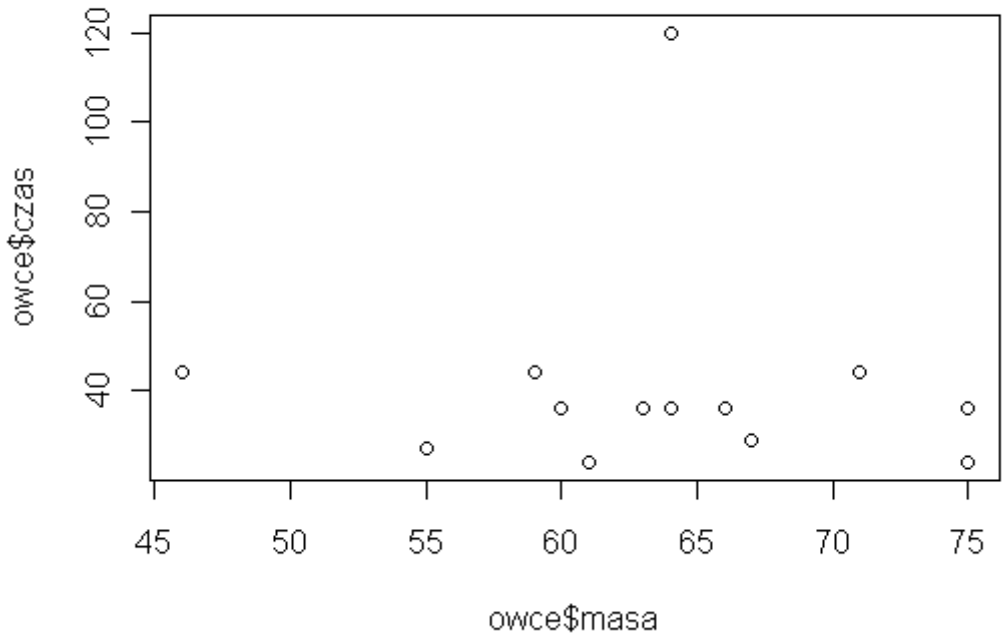
```
> wir.pr <- predict(mod.pois, type="response")
> plot(wirus$zmiany,wir.pr, xlab="czas",ylab="predykcja",main="Poisson")
> abline(a=0,b=1,col=2)
```



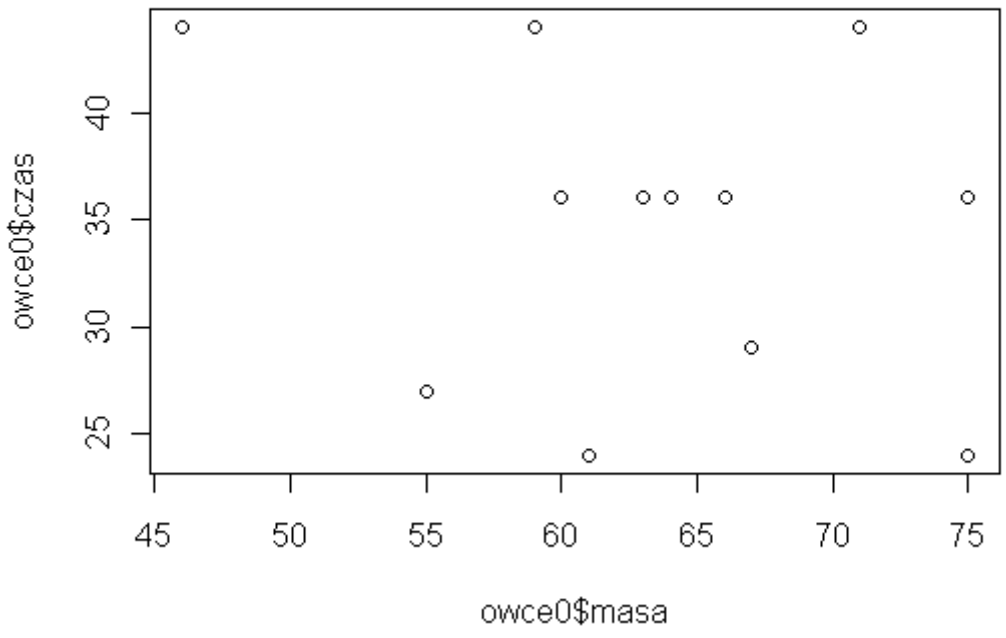
*

```
> masa <- c(46,55,61,75,64,75,71,59,64,67,60,63,66)
> czas <- c(44,27,24,24,36,36,44,44,120,29,36,36,36)
> owce <- data.frame(cbind(masa,czas))
```

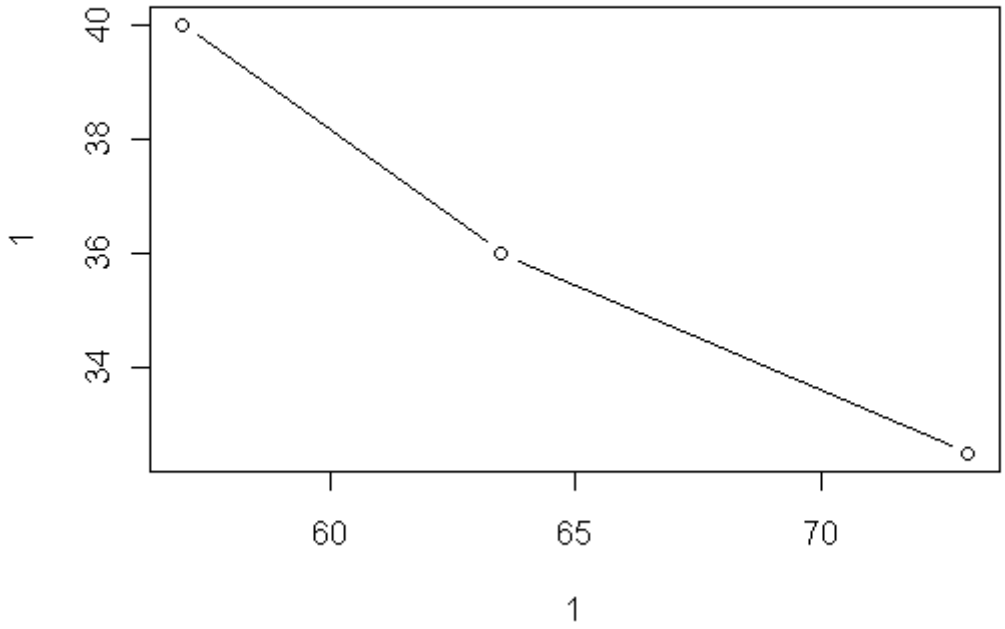
```
> plot(owce$masa,owce$czas)
```




```
> owce0 <- subset(owce, czas<100)
> plot(owce0$masa,owce0$czas)
```

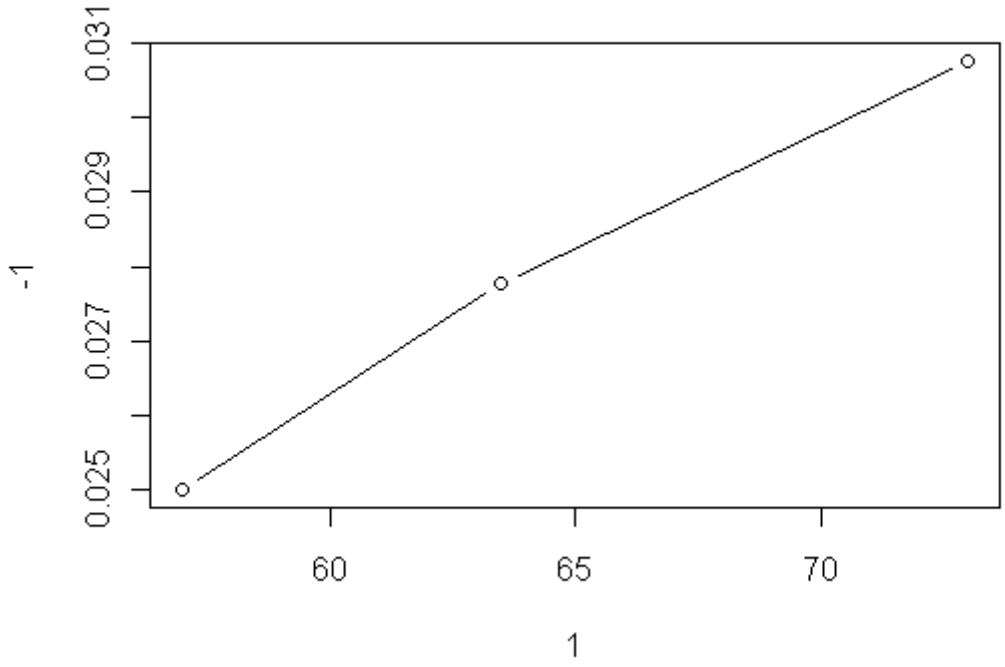



```
> strzalkaTukeya(owce0$masa,owce0$czas,d=0.5, prog=0.2)

 potęga x = 1  potęga y = 1
 błąd = 0.2510288  b1 = -0.6153846  b2 = -0.3684211
```



*
potęga x = 1 potęga y = -1
 błąd = 0.1515152 b1 = 0.0004273504 b2 = 0.0003148898

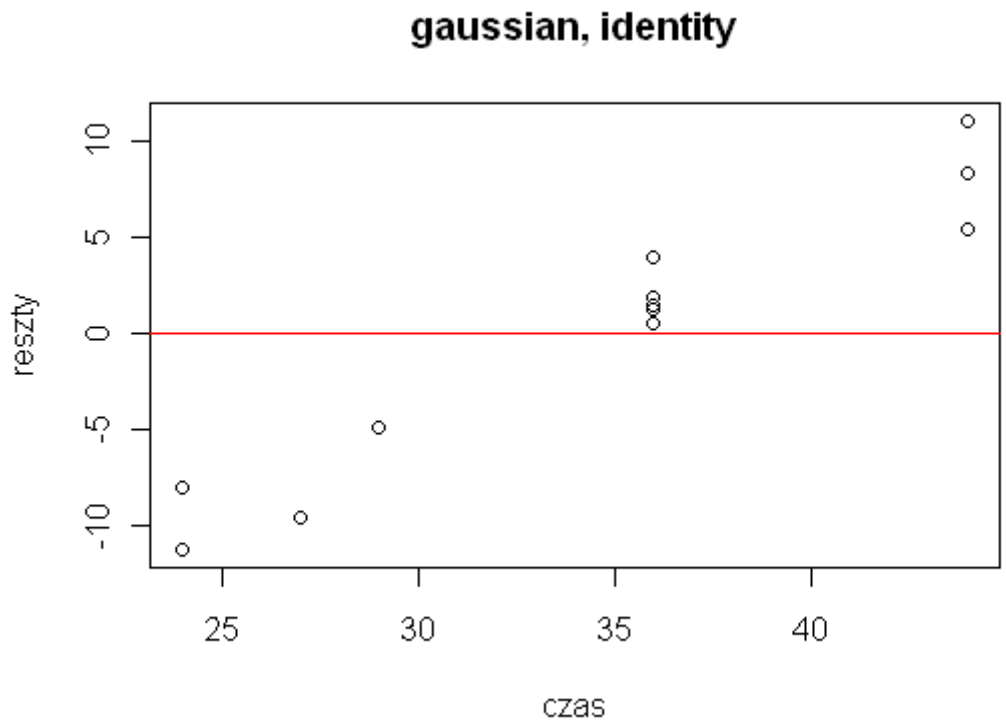
 PRZYBLIŻONE RÓWNANIE REGRESJI: a = 0.003846154 b = 0.0003711201




```
> owce.gauss0 <- glm(czas~masa,data=owce0,family=gaussian)
> summary(owce.gauss0)
```

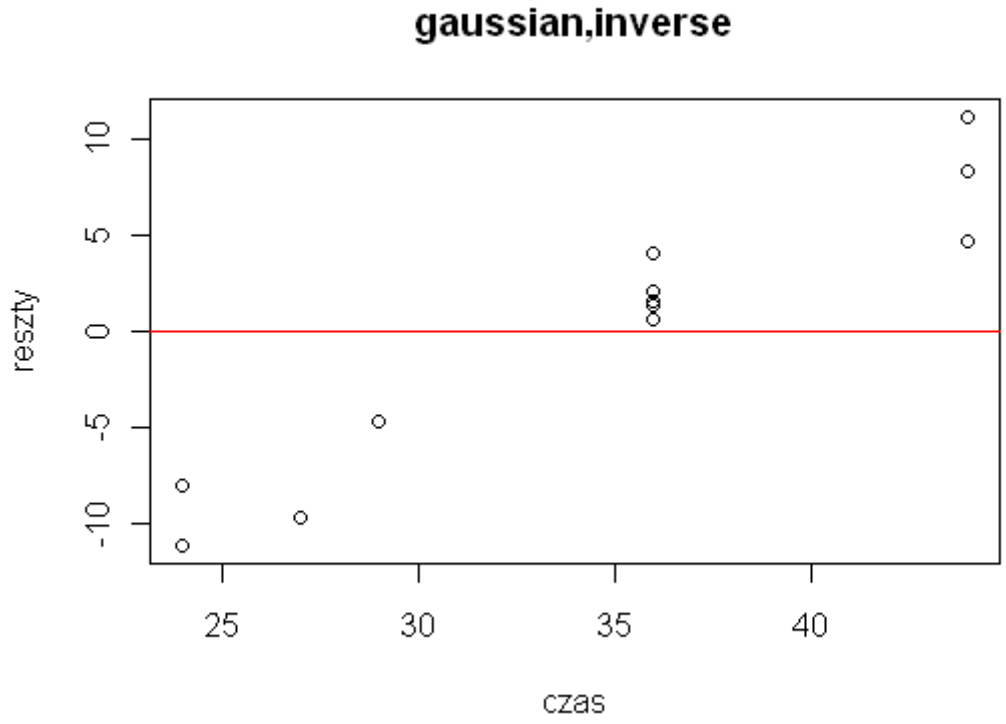
```
Call:
glm(formula = czas ~ masa, family = gaussian, data = owce0)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-11.235   -5.667    1.333    4.299   11.037

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  49.0947    17.2431   2.847   0.0173 *
masa         -0.2272     0.2694  -0.843   0.4188
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for gaussian family taken to be 54.95861)

    Null deviance: 588.67  on 11  degrees of freedom
Residual deviance: 549.59  on 10  degrees of freedom
AIC: 85.946

Number of Fisher Scoring iterations: 2
```

```
> reszty_glm_wykres(owce0$czas,owce.gauss0,"czas","gaussian, identity")
```

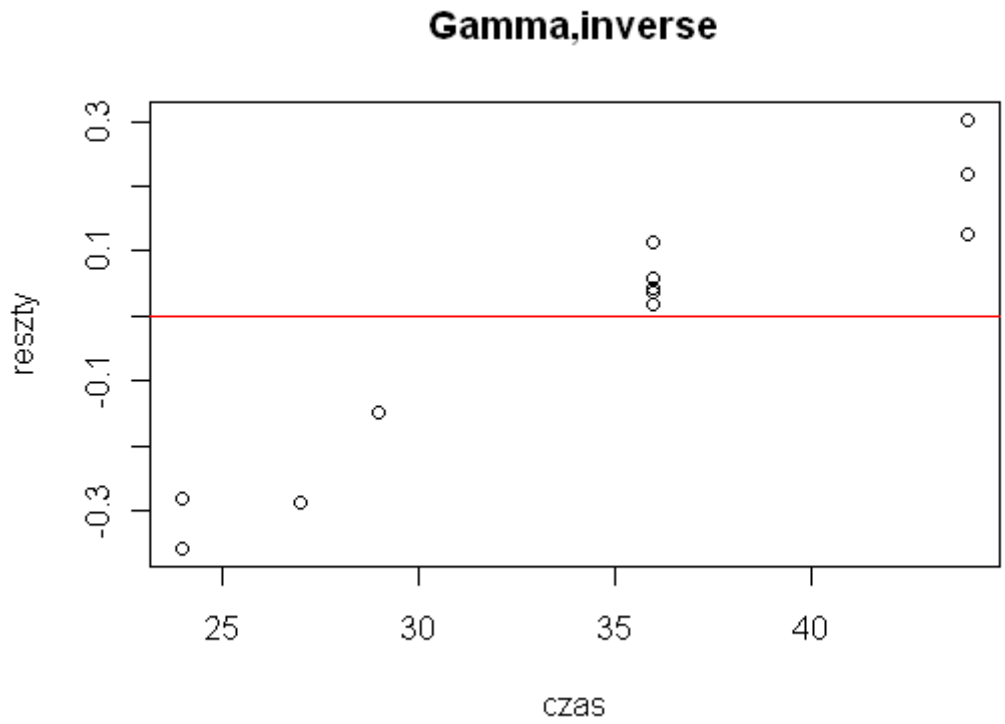



```
> owce.gauss <- glm(czas~masa,data=owce0,family=gaussian(link="inverse"))
> summary(owce.gauss)

Call:
glm(formula = czas ~ masa, family = gaussian(link = "inverse"),
    data = owce0)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-11.164   -5.547    1.447    4.169   11.160

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept) 0.0161606  0.0130927   1.234    0.245
masa        0.0002013  0.0002106   0.956    0.362
```

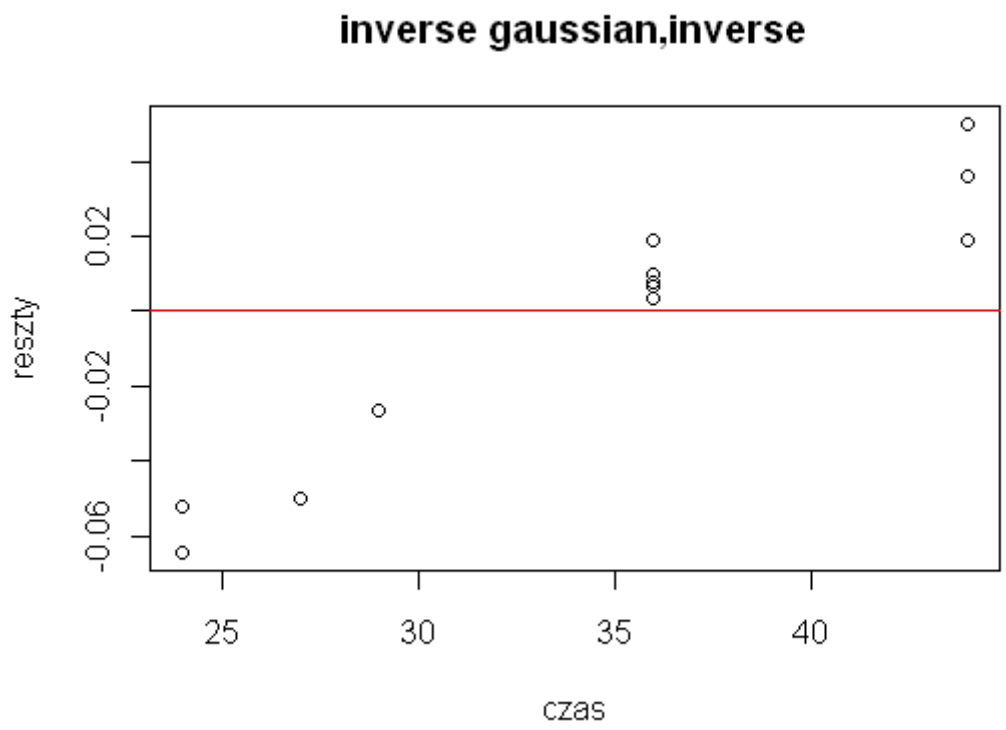
```
(Dispersion parameter for gaussian family taken to be 54.59016)

    Null deviance: 588.67  on 11  degrees of freedom
Residual deviance: 545.90  on 10  degrees of freedom
AIC: 85.865

Number of Fisher Scoring iterations: 6

> reszty_glm_wykres(owce0$czas,owce.gauss,"czas","gaussian,inverse")
```



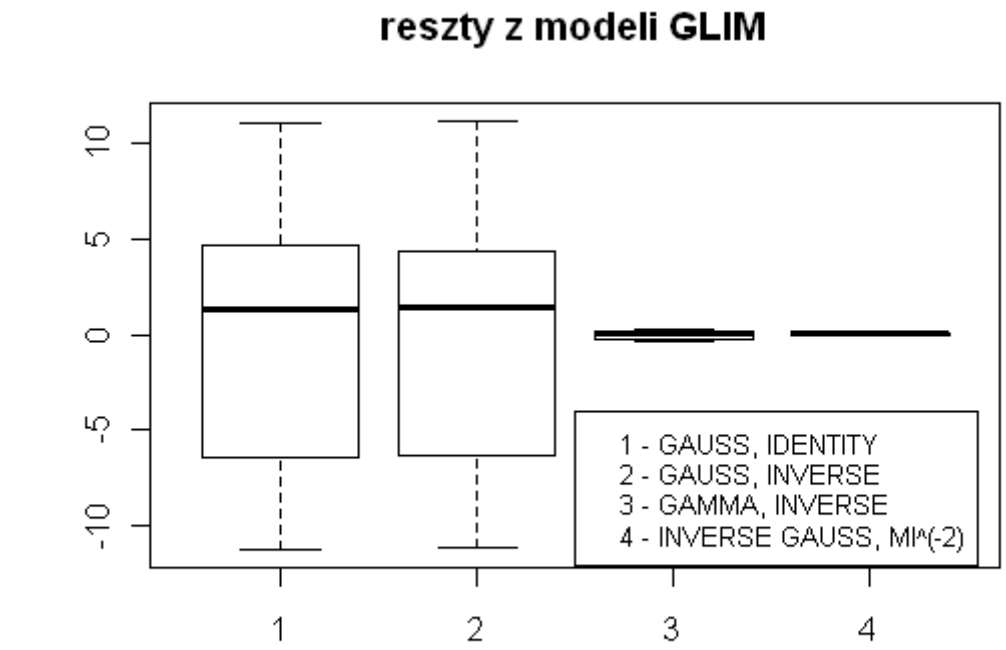

```
> owce.gamma <- glm(czas~masa,data=owce0,family=Gamma)
> summary(owce.gamma)

Call:
glm(formula = czas ~ masa, family = Gamma, data = owce0)

Deviance Residuals:
     Min        1Q    Median        3Q       Max
-0.35841  -0.18256   0.04065   0.11627   0.30229

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept) 0.0172032  0.0138411   1.243    0.242
masa        0.0001846  0.0002190   0.843    0.419

(Dispersion parameter for Gamma family taken to be 0.04589783)

    Null deviance: 0.51988  on 11  degrees of freedom
Residual deviance: 0.48787  on 10  degrees of freedom
AIC: 86.283

Number of Fisher Scoring iterations: 4

> reszty_glm_wykres(owce0$czas,owce.gamma,"czas","Gamma,inverse")
```




```
> owce.igaus <- glm(czas~masa,data=owce0,family=inverse.gaussian)
> summary(owce.igaus)

Call:
glm(formula = czas ~ masa, family = inverse.gaussian, data = owce0)

Deviance Residuals:
      Min         1Q     Median         3Q        Max
-0.064489  -0.032326   0.007088   0.019059   0.050143

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept) 1.728e-04  7.818e-04   0.221    0.830
masa        1.049e-05  1.246e-05   0.842    0.420

(Dispersion parameter for inverse.gaussian family taken to be 0.001332211)

    Null deviance: 0.015770  on 11  degrees of freedom
Residual deviance: 0.014855  on 10  degrees of freedom
AIC: 86.591

Number of Fisher Scoring iterations: 4

> reszty_glm_wykres(owce0$czas,owce.igaus,"czas","inverse
gaussian,inverse")
```

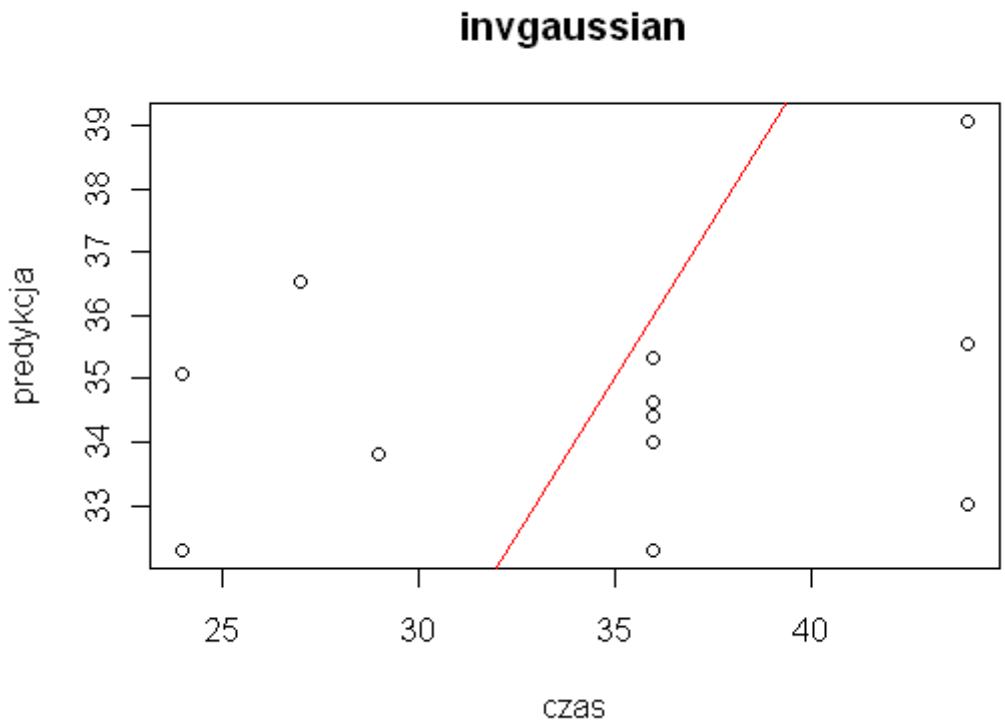



```
> ll<-
lapply(list(owce.gauss0,owce.gauss,owce.gamma,owce.igaus),FUN=residuals)
> boxplot(ll,main="reszty z modeli GLIM")
> legend(2.5,-4, cex=0.8,c("1 - GAUSS, IDENTITY", "2 - GAUSS, INVERSE",
+                          "3 - GAMMA, INVERSE","4 - INVERSE GAUSS, MI^(-
2)"))
```




```
> og.pr <- predict(owce.igaus, type="response")
> plot(owce0$czas,og.pr, xlab="czas",ylab="predykcja",main="invgaussian")
```

```
> abline(a=0,b=1,col=2)
```




```
> ogamma.pr <- predict(owce.gamma, type="response")
> plot(owce0$czas,ogamma.pr, xlab="czas",ylab="predykcja",main="Gamma")
> abline(a=0,b=1,col=2)
```